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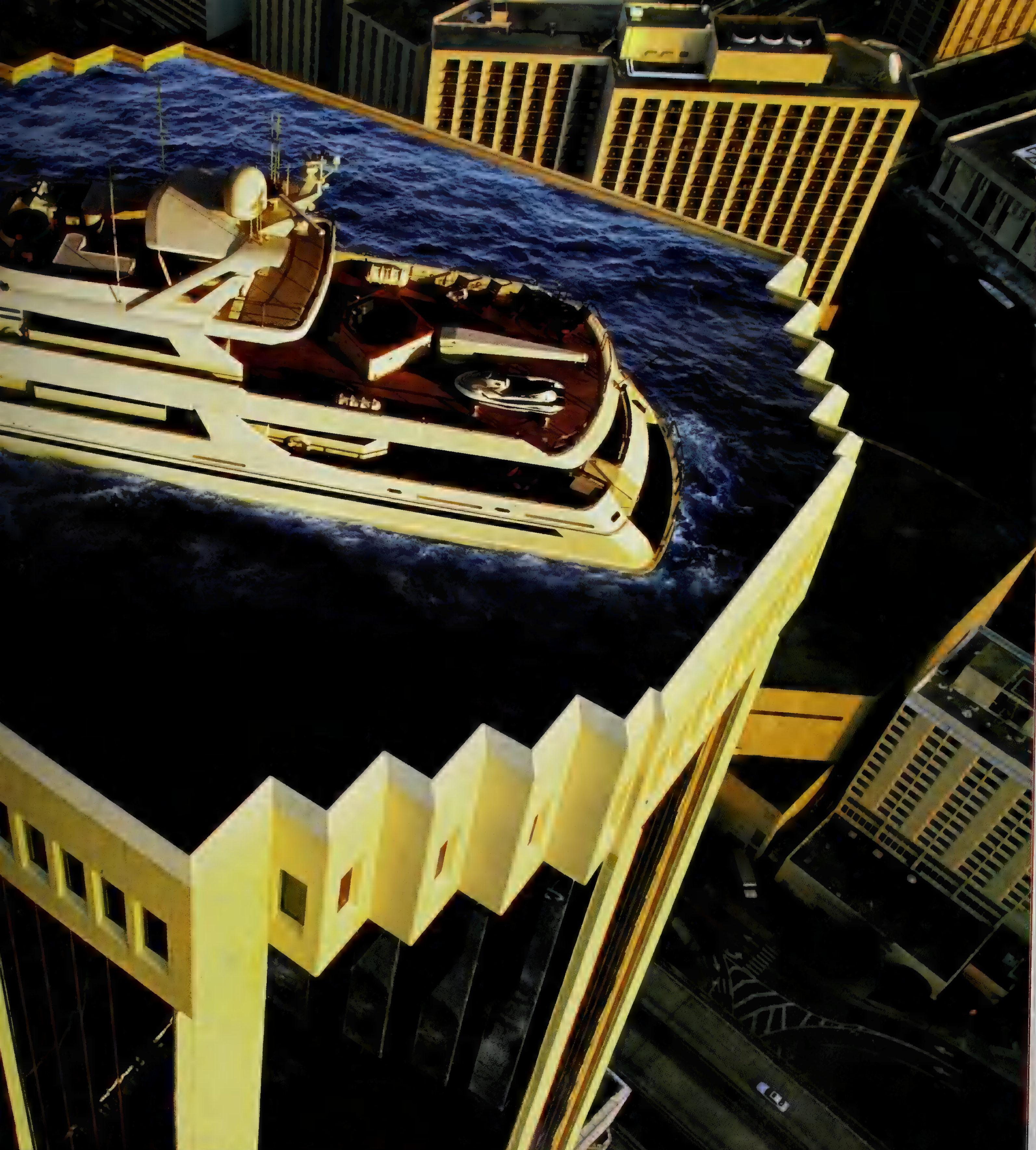

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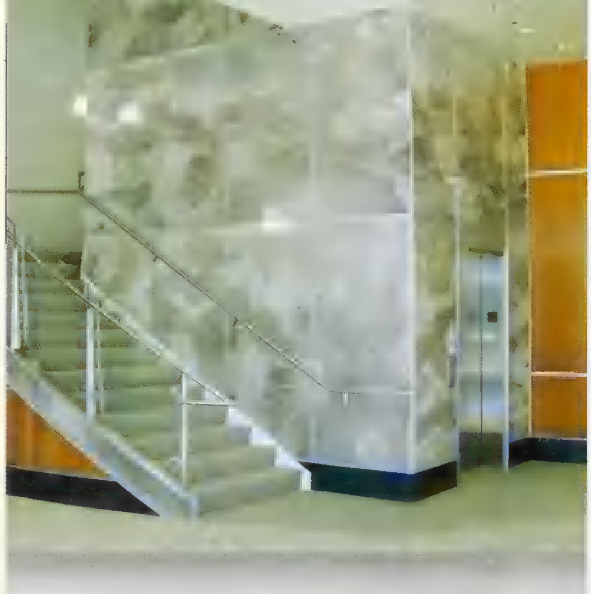

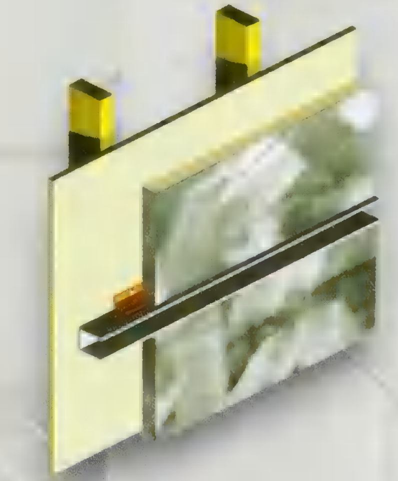

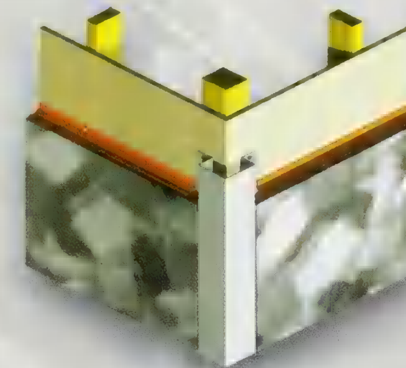

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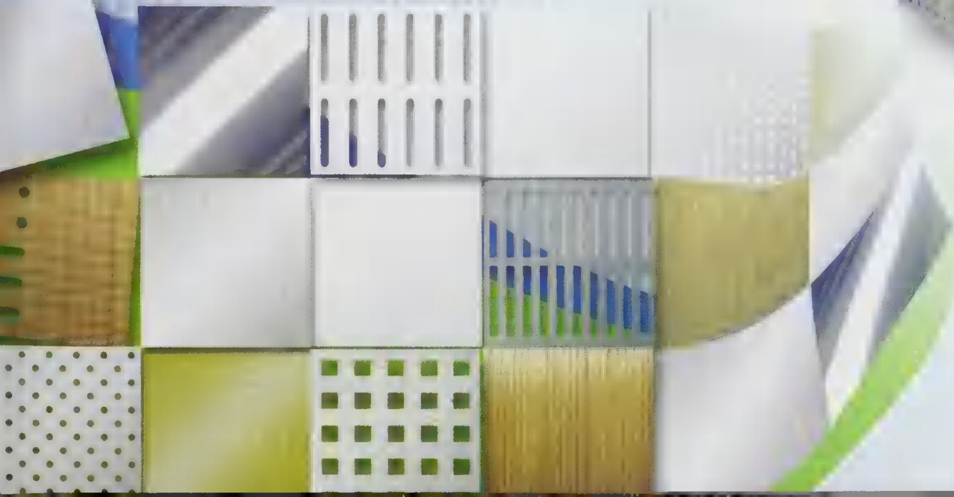

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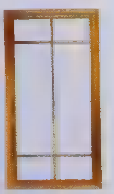

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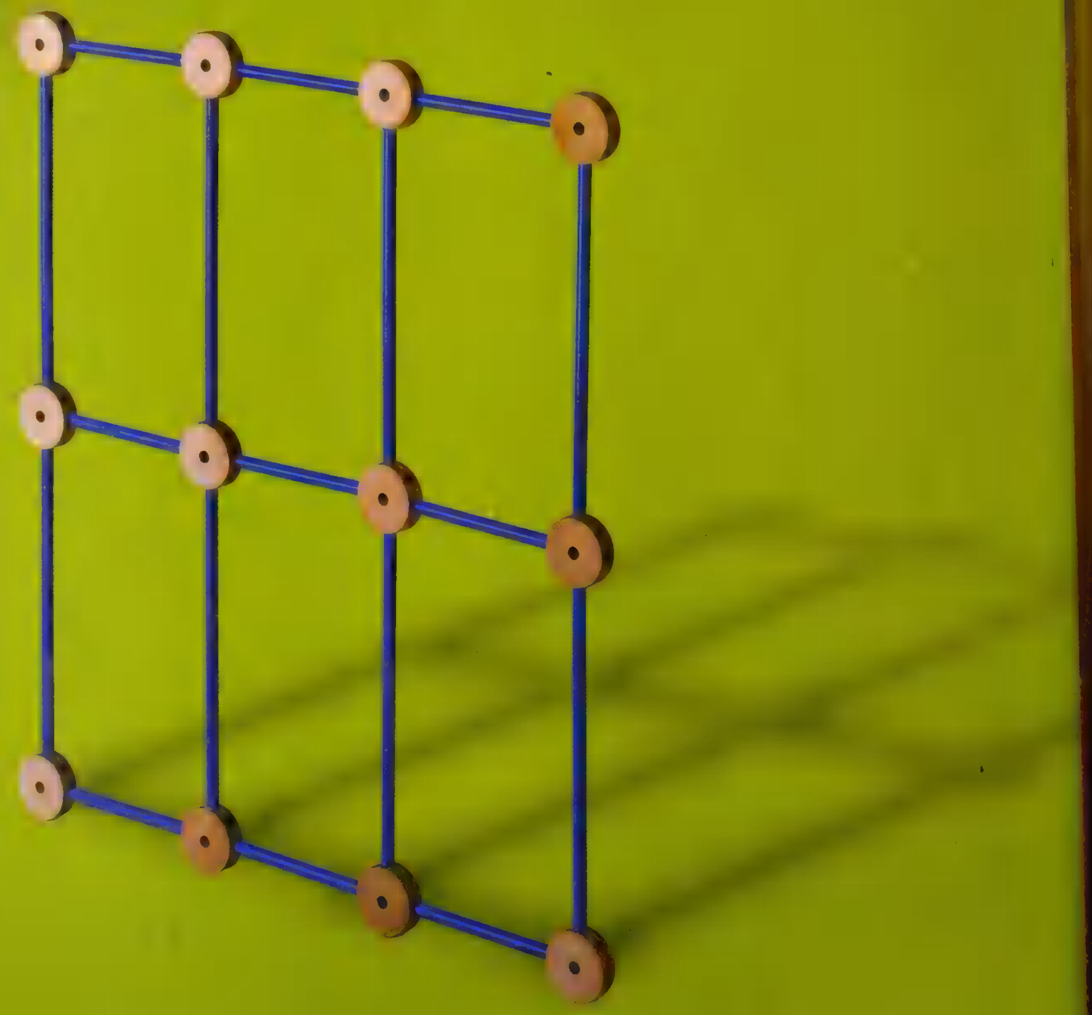

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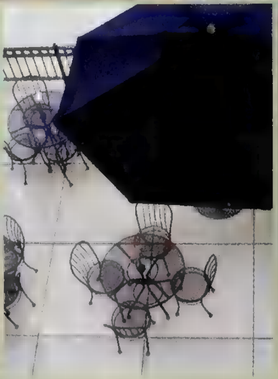

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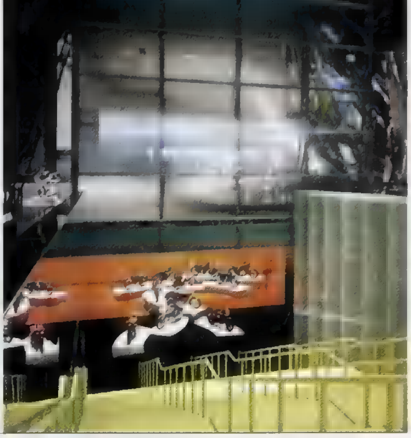

On the Cover: *The Eden Project, designed by Nicholas Grimshaw. Photograph by Richard Kalina*
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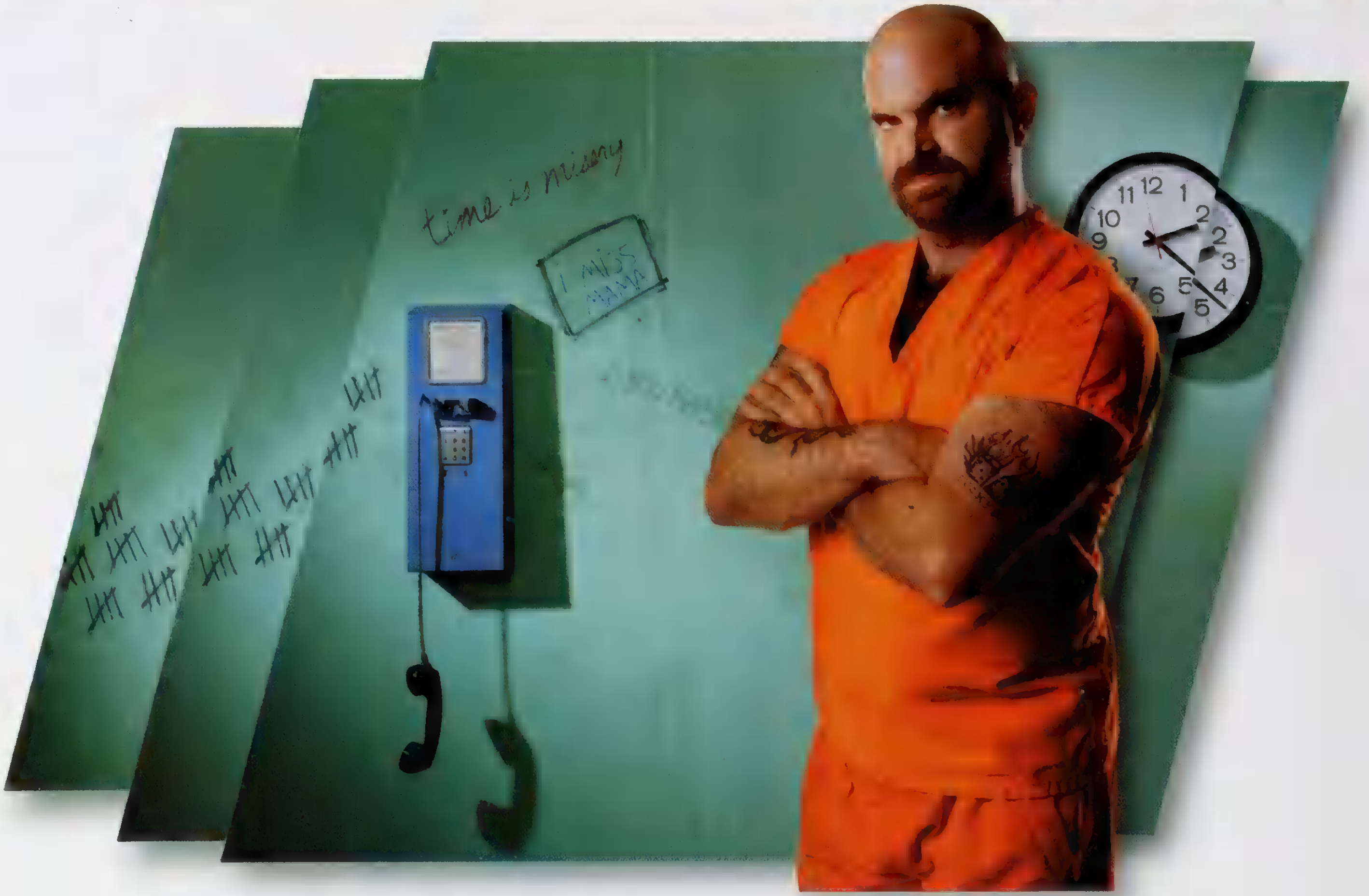

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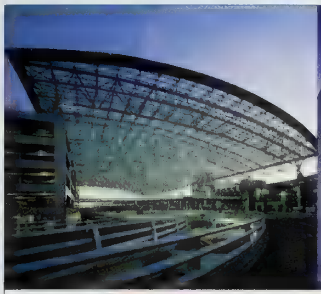
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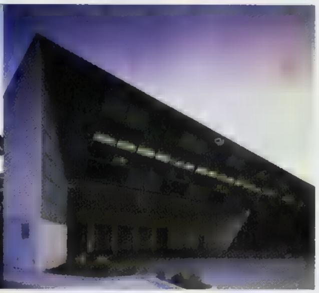
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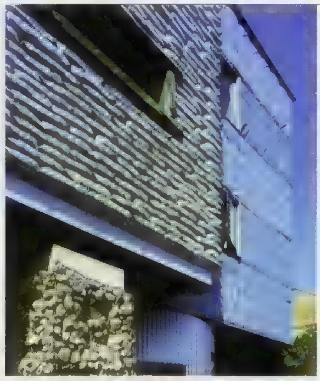
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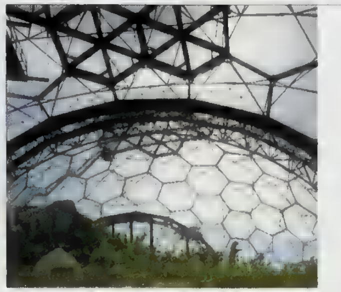
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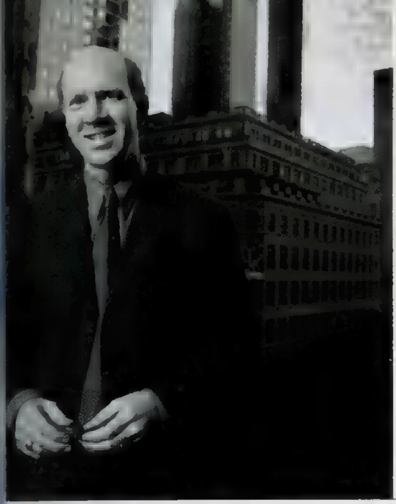

Prize Research

Editorial

By Robert Ivy, FAIA

Nicholas Grimshaw's Eden Project in Cornwall, England, featured on this month's cover, both startles and instructs. The human form appears diminished above the 35-foot geometry of the geodesic dome, here covered in the air-filled, gossamerlike skin of ETFE, a space-age foil that was actually invented decades ago. The geodesic dome's inventor, Buckminster Fuller, whose prodigiously fertile mind was devoted to architectural research, would not be surprised to see this marriage of materials by a British architect, transforming his structural ideas into light-as-air bubbles at the lunar scale.

Bucky was the tip (quite a tip!) of a tsunami. For the post–World War II generation, for whom Ronald Reagan (the spokesperson for General Electric) declared "Progress is our most important product," research promised an ever-brighter future; space, our national challenge, lent a cosmic impetus to scientific pursuits. Tarnished, even perverted, by subsequent events such as the war in Vietnam, our national hunger for continually unfolding newness waned, as architects took up formal exploration, historicism, or theory: We left the heavy lifting, and the role of invention, to others.

Research did not disappear. Like monasteries that kept the world of ideas alive when the secular world seemed bent on upheaval, universities carried the torch. Institutions such as MIT, Carnegie Mellon, and Georgia Tech, aided by corporate sponsorships, have continued to advance our understanding of productivity in the workplace, building materials, the feasibility of mass-produced housing, and the benefits of digital technology. Nor was research locked up in ivy. Engineers, always hungry for new applications and improved systems, have encouraged research within their firms.

As the millennium turned, however, architects rejoined the race. Today, research extends beyond pure science to engage social analysis, as Rem Koolhaas examines sprawling cities worldwide for clues to their messy vitality. Or, for architects like Santiago Calatrava, research may mean artistic discovery, in which drawings merge into kinetic sculpture. The gigantic moving roof at the Milwaukee Museum of Art owes its undulating form to smaller-scale investigations by Calatrava that blur the distinction between science and art.

Here is breaking news: Whether in building systems or in more esoteric pursuits, architectural research has a major new champion. As reported in this magazine in December, the College of Fellows of the American Institute of Architects recently inaugurated the Latrobe Fellowship. Initially funded by the executive committee of the College of Fellows with a $50,000 prize to "promote research to advance the profession," the first award went to a Philadelphia firm, Kieran Timberlake Associates. Our current building-science story on technology transfer (see page 131) describes how the winning architects dedicated their grant to devising a new construction methodology. A stunning wall system with improved thermal characteristics under construction at the University of Pennsylvania resulted.

Encouraged by the program's initial successes, the Fellows decided to up the ante to international prominence: AIA meets Pritzker Prize or the Premium Imperiale. By consolidating a welter of worthwhile but smaller stipends already offered by the Institute, the money fell automatically into place. In the future, the Latrobe will consist of a single biennial award of $100,000—twice the original amount. Because of the heft of the purse, this grant will bring strong focus to architectural research throughout the media and the profession, while the advances made will spin out their own benefits during the intervening months. In a single stroke, with vision, action, and cash, the College of Fellows has elevated the content of architecture to the same high plane as its form. No research is required to admire the decision.

Robert Ivy

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CIRCLE 9 ON INQUIRY CARD

Letters

Looking for the best way

In your September issue [Letters, page 27], Douglas Kelbaugh, FAIA, addressed the American Institute of Architecture Students' Studio Culture Task Force with the letter titled "Are the kids alright?" In response, the AIAS will refocus the intent of the discussion.

While Mr. Kelbaugh's argument that "the car, not the all-nighter, is the most recent and more lethal ingredient in studio culture" may have raised some interesting points regarding society's dependence on the automobile, he seems to have completely missed the point of the AIAS's efforts. Studio culture is not about our automobile-reliant society, but rather the analysis of the positive and negative aspects of the educational and cultural experiences that occur in design studios.

The purpose of the Studio Culture Task Force is to research and analyze the current practices in architecture education and target opportunities for positive change in studio culture. The goal is to generate discourse on developing a more balanced, healthy, and inclusive educational experience. While many positive values and habits are learned in the design studio, our current practices also harbor some dangerous and tragic side effects.

If architects are to remain a valued and relevant part of society, there are many real and deep-rooted questions that we must address. Are architecture studios contributing to emotional, physical, and intellectual deprivation? Are architecture schools too isolated from their communities and other disciplines on campus? Are students taught to value their time, communicate effectively, and work collaboratively? Why is the "time-honored practice of long and often late hours in studio" perpetuated and glorified as a good thing? Are all architecture faculty members and critics successfully prepared to educate students?

The AIAS is not averse to hard work, dedication, or competition; we simply question whether architecture students can be better educated to face the future. The profession of architecture is going through a period of vast change. If we are to remain a valid and vibrant profession, we must make some changes in the way architecture is practiced and taught. The design studio is a perfect place to start. I invite any interested persons to provide input into our research process. Please contact the AIAS at mail@aiasnatl.org, with your comments on our studio culture initiative.

—Matthew R. Herb
AIAS National President
Washington, D.C.

If the building fits, build it

In response to Thomas Hine's article about "Preservation's Shackles" [November 2001, page 90] and the apparent schism between architects and preservationists, the tension isn't between ambitious new design and themed pastiche. More often the choice is between difficult work that breaks existing fabric—and the banality that results when poor designers attempt to be "compatible."

Real courage, and civic responsibility, are shown when good designers work within the patterns that formed the urban environment to produce buildings that are at once compelling and courteous.

San Franciscans know well the corner where Rem Koolhaas proposes to build Prada's new flagship. It is within a downtown retail district that has maintained particular cohesiveness. The district will not die if Prada is built, and it may even benefit. But the illustrations provided in the article show perfectly what small adjustments could be made—to height of ground floor, floor lines, and implied cornice, for example—to fit the new composition more smoothly into the streetscape. I suspect that, among "ambitious" designers, smooth fit is not an objective that has much currency these days.

—Jay Turnbull
Page & Turnbull, Inc.
San Francisco

A voice from experience

The New York City Fire Department studies in-depth building construction for promotional purposes, but, I feel, has been left behind by the technological advances since the World Trade Center towers were built. Most of what goes on today by my colleagues comes in the form of self-learning due to a close call with something that failed during a normal fire or, worse, a death. I was assigned to lower Manhattan for more than 12 years (1987–99), 100 Duane Street, and arrived at the WTC many times for various alarms or emergencies, and always in under four minutes from receipt of alarm.

One of the first things we learn in our studies is that steel begins to soften somewhere around 1,000 degrees Fahrenheit, and to fail around 1,400 degrees. I can tell you what we firefighters don't like: lightweight steel bar joists, spray-on fireproofing, no redundancy in structural-load-bearing components, and cost-cutting measures. Some of us are even of the opinion that the Empire State Building would stand under such an assault, partly because it did so in 1946 when struck by a B-25, and partly because we've seen up close what fire does to lightweight constructed buildings and heavyweight buildings.

I'm not suggesting we go backward to build like the Empire State Building again, but I'm reminded of a line from the end of the movie *The Towering Inferno*, in which the architect and the fire chief (played by Steve McQueen) meet after losing so much, and the fire chief says, "maybe now they will start talking to us [the fire service] about what we think is important when they build these things." The driving force behind the new buildings should be safety, strength, stability, and not just the greenbacks saved by the use of lightweight materials.

—Lieutenant Gregory Gargiso
FDNY

Starting over

I can't help but agree with Robert Campbell's December Critique [page 37]. The way in which the architectural community has dealt with the issue of Ground Zero is offensive. To use this tragedy as a professional marketing opportunity is highly disrespectful, both to those directly affected by this horrific event and to the rest of us who mourn alongside them. However, there is a reality that must be faced: While memorializing the victims of September 11 is of utmost priority, the threat to the economic vitality of lower Manhattan will not allow for this site to lay void of commercial space. If construction and/or reconstruction cannot be avoided, the responsibility then lies with us, the architects and students of this profession, to make sure this resurrection of commercial space is done in such a way that is both respectful of, and secondary to, the memory of September 11.

—Paul A. Tebben
Student, Harvard University
Graduate School of Design

Corrections

The form•Z 3.8 software product from auto•des•sys should have been included in the General Data section of the December 2001 Product Reports [page 147]. An image of the product was mistakenly attributed to Autodesk's Architectural Desktop 3.3.

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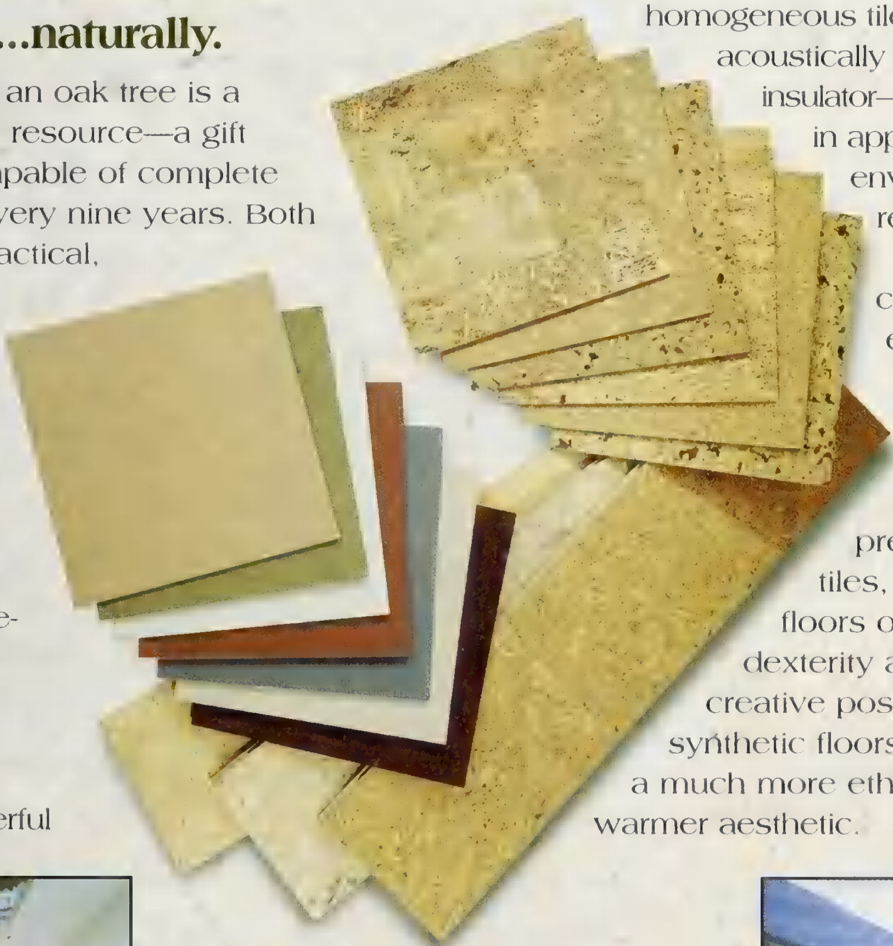

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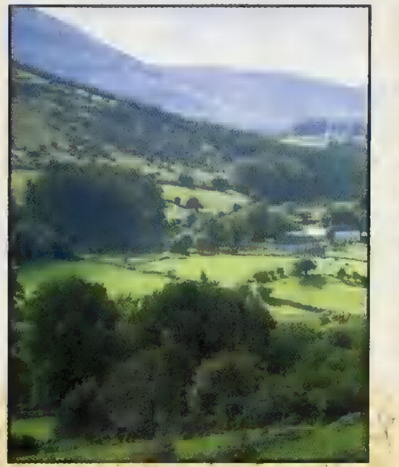

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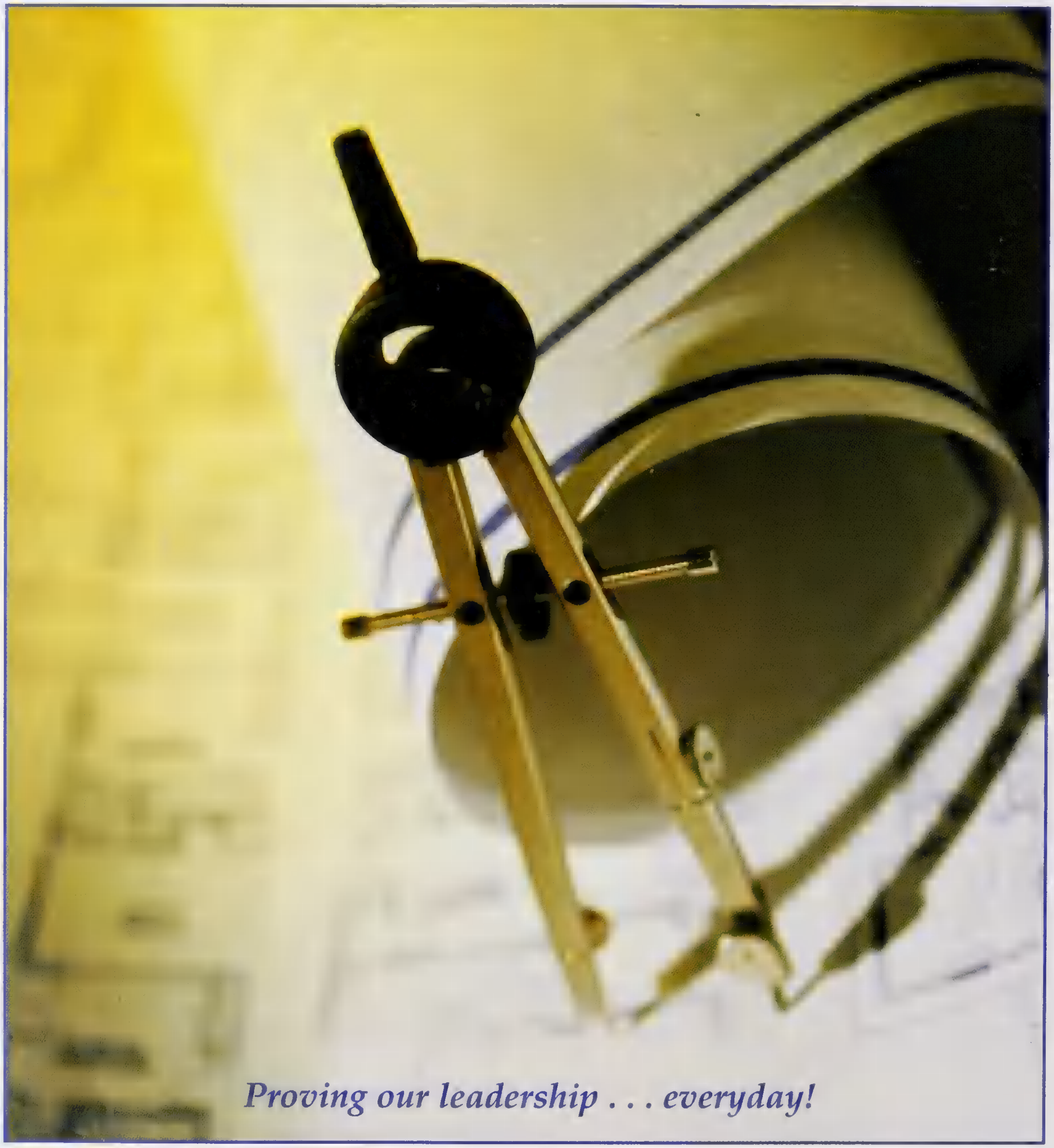

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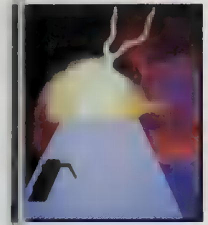

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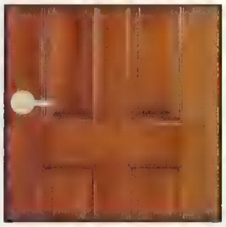

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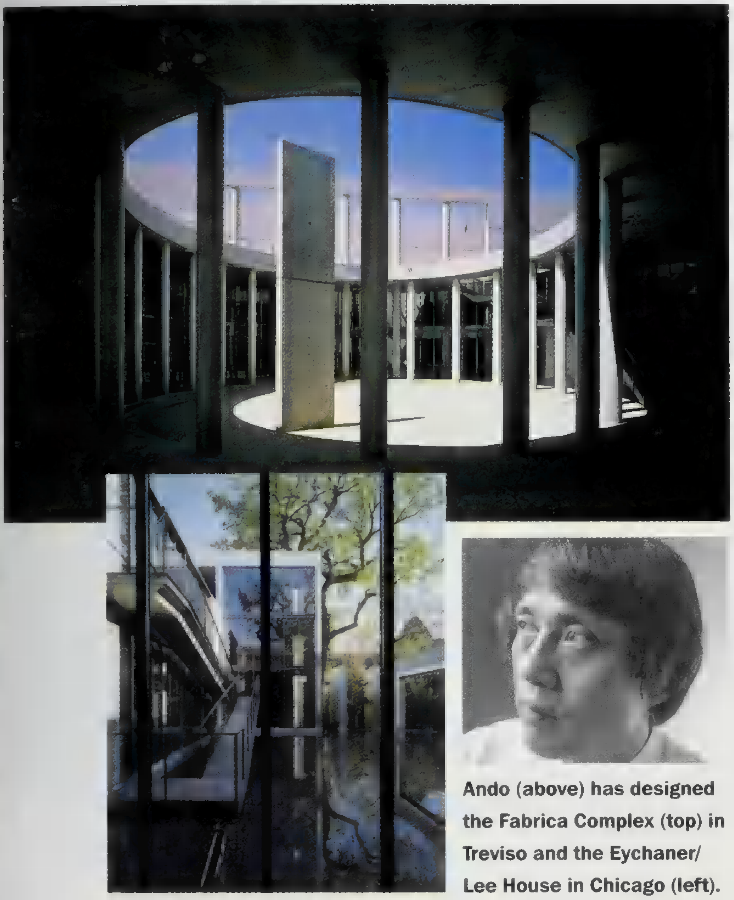
2001

CIRCLE 12 ON INQUIRY CARD

Record News

Highlights Piano's N.Y. Times tower p. 24
Examining WTC wreckage p. 26
Trump's Chicago plans p. 32
Lincoln Center redevelopment p. 34



Ando (above) has designed the Fabrica Complex (top) in Treviso and the Eychaner/Lee House in Chicago (left).

Tadao Ando honored with 2002 AIA Gold Medal

On December 6, 2001, the day before the 60th anniversary of Pearl Harbor, the American Institute of Architects (AIA) selected Japanese architect Tadao Ando, Hon. AIA, as the 59th recipient of the AIA Gold Medal, the highest honor the AIA confers on an individual.

The Gold Medal recognizes someone whose body of work has had a significant and lasting influence on the theory and practice of architecture. Ando, 60, will receive the Gold Medal at the 2002 American Architectural Foundation Accent on Architecture gala Friday, March 1, in Washington, D.C.

Past Gold Medal winners include Thomas Jefferson, Frank Lloyd Wright, Louis Sullivan, I.M. Pei, FAIA, and 2001 winner Michael Graves, FAIA. In recognition of their legacy to architecture, the name of each Gold Medal recipient is chiseled into a granite wall of honor located in the lobby of the AIA headquarters in Washington, D.C.

Ando told RECORD, "Having learned from masters such as Frank Lloyd Wright, Mies van der Rohe, and Louis Kahn, I feel so honored to be awarded the greatest medal from the AIA. I will continue trying my best to make buildings that will give a stimulus to the architectural culture in the world."

Born in Osaka, Japan, in 1941, Ando did not receive any formal architectural education. He established Tadao Ando Architect & Associates in 1970. His recent projects include the Fabrica/Benetton Communications Research Center [January 2001, page 80], Pulitzer Foundation for the Arts in St. Louis (this issue, page 55), and the Eychaner/Lee House in Chicago. *John E. Czarnecki, Assoc. AIA*

Thompson, Ventulett, Stainback wins 2002 AIA Firm Award

The American Institute of Architects (AIA) named Atlanta firm Thompson, Ventulett, Stainback & Associates (TVS) as recipient of the 2002 AIA Architecture Firm Award.

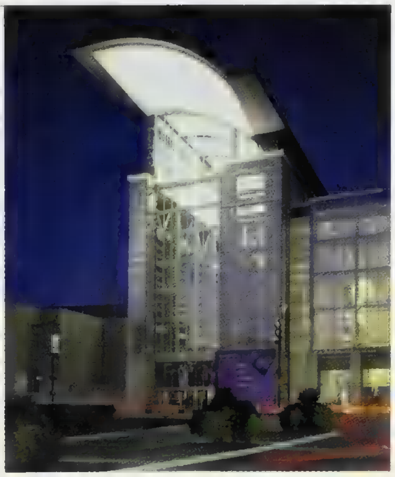
The highest honor the AIA confers on an architecture firm, the award recognizes a practice that has produced distinguished architecture consistently for at least 10 years. The award will be presented to TVS at the 2002 American Architectural Foundation Accent on Architecture gala Friday, March 1, in Washington, D.C.

Previous recipients include Gensler; Kohn Pedersen Fox Associates; I.M. Pei & Partners; Cesar Pelli & Associates; Skidmore, Owings & Merrill; and 2001 winner Herbert Lewis Kruse Blunck Architecture.

"The reaction [when notified that TVS won] was just overwhelming. It really was a rewarding experience to tell the firm," said Roger Neuenschwander, AIA, president of TVS. "To be selected by peers is fantastic: it validates our commitment to create good design. It's the ultimate recognition for us."

TVS employees in Atlanta.

Founded in 1968, TVS established itself in the Atlanta area by designing the Omni/CNN Center and the Georgia World Congress Center. Recent projects include the Woodruff Arts Center Renovation, Philadelphia Convention Center, McCormick Place Expansion, and the United Parcel Service world headquarters.



Chicago's McCormick Place expansion.

In nominating the firm, Lugean L. Chilcote, FAIA, and Thompson E. Penny, FAIA, write: "We have observed at TVS a corporate culture that emphasizes collaboration, continuity, and depth and breadth of achievement and expertise." *JEC*

OFF THE RECORD

San Francisco architect [illegible] FAIA has begun his term as the 2002 president of the American Institute of Architects. Chong is the founding partner of the 85-person firm Gordon H. Chong & Partners.

[illegible] has been selected to master plan London's Millennium Dome site with 5,000 homes, as well as offices, retail, and open space. [illegible] will design a 20,000-seat Millennium Dome arena.

[illegible] FAIA executive director of the Pritzker Prize, stepped down as president of Purchase College of the State University of New York in December. Lacy had that position since 1993.

[illegible] FAIA has been selected to design the new Tampa Museum of Art building. Construction on the 125,000-square-foot building will begin in 2003. Viñoly was one of four finalists considered for the job, including Arquitect[illegible] Polshek [illegible] and Machado [illegible].

The Prairie View A&M University School of Architecture has selected [illegible] with [illegible] of Dallas as the architects of its new school facility. Short-listed firms included Gwat[illegible] Predock and [illegible].

Prince Charles at the Building for the 21st Century conference in London in December: "At the top of these new structures, let's see genuine artistry that truly reaches the heart and soul of those who look on, rather than the overblown phallic structures and depressingly predictable antennae that say more about architectural ego than craftsmanship." For a complete story by *Engineering News Record* ("Rapid Evacuation Concepts Aired") on the Building for the 21st Century conference, visit architecturalrecord.com/wtc.

Piano's N.Y. Times tower moves forward

A photomontage (left) illustrates Piano's tower. A model (above) shows the 40th Street elevation.

Renzo Piano unveiled his detailed architectural models and drawings for a 52-story tower for The New York Times Company at a December 13 press conference.

The event took place just hours after the New York Times Company and developer Forest City Ratner Companies (FCRC) posted letters of credit valued at $106 million to acquire the site on Eighth Avenue between 40th and 41st streets. A total of 55 businesses—ranging from sex shops to architecture firms—will be displaced by the tower. The estimated construction cost was not released. Ground breaking will likely occur in 2003.

Piano called his design, developed with Fox & Fowle Architects, "an expression of love for this city and the values it represents." The building will have two skins. Suspended on screens 18 inches from one skin of transparent glass will be a second skin with about 250,000 white ceramic rods, 1⅝ inches in diameter. The rods will filter sunlight but will be spaced to allow views outside. The building itself will be 748 feet tall, but the ceramic screens will reach 840 feet, and a central mast will top out at 1,142 feet.

The Times will own and occupy 800,000 square feet of space on floors 2 through 28. FCRC will lease offices on floors 29 through 50. The ground floor will include a lobby, auditorium, and retail space. A conference facility on the top floor will be surrounded by a grove of trees.

In the wake of the September 11 tragedy, the Times emphasized that it was committed to a tall building that appeared welcoming, visible, and transparent. Michael Golden, vice chair of The New York Times Company, said, "This building is designed from the ground up to reinforce the values of The New York Times Company." *JEC*

AIA anticipates positive net assets total through 2001; shifts primary access to electronic means for key member services

Taking steps to financial recovery, the American Institute of Architects (AIA) expected to report a positive net assets total for the end of 2001 and continues to plan for net assets of $2.5 million by the end of 2003.

Through 2000, the AIA's completed audit by PricewaterhouseCoopers shows total net assets of negative $1.475 million, which is an improvement from the auditor's worst-case calculation (in May 2001) of negative $4.4 million. As ARCHITECTURAL RECORD has reported [June 2001, page 28; December 2001, page 24], a combination of events in late 2001 further improved the AIA's net assets total. Through financial settlements by the AIA with nearly 60 AECdirect creditors, the AIA's net assets deficit was reduced by almost $1.5 million. PricewaterhouseCoopers revised downward the sum of the AECdirect deficit that must be consolidated with the AIA budget. The institute's financial situation is also improved with a forecast net income of $2.146 million for 2001 that far exceeds the budgeted net income of $1.446 million. The exact cost of AECdirect to the institute has not been calculated, and previously reported estimates of losses attributed to AECdirect had no basis in fact.

Following the board of directors meeting in early December, the AIA instituted changes that ensure primary access to key services will be through electronic means. The AIA restricted physical access to its library/archive to an appointment-only basis and eliminated the print version of *AIArchitect*, the AIA's national newsletter. In a written statement to ARCHITECTURAL RECORD, Chuck Hamlin, managing director of communications for the AIA, said: "These changes are a direct response to the ways in which AIA members wish to receive services."

What had been a monthly print newsletter through 2000, *AIArchitect* was reduced to quarterly digest print publication last year. It will now be published exclusively via the AIA members-only Web portal.

The AIA library and archives, located in the AIA national office in Washington, D.C., is now open by appointment only. Hamlin said, "The AIA library and archives will continue to provide a range of services to members, but with an emphasis on electronic search capabilities through the MyAIA members-only portal (www.aia.org). While this ongoing emphasis required the elimination of several staff positions at the national component, the change focuses more resources on the needs of the AIA's worldwide membership." *JEC*

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SPECIAL REPORT

Symposium speakers, including Moynihan, insist on freedom without fortresses

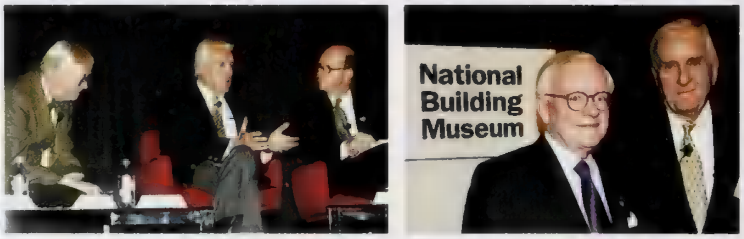
Buildings in the United States, especially public buildings, cannot be built as insular fortresses that are unwelcoming to the public. That was the message of speakers, including the Honorable Daniel Patrick Moynihan, former U.S. senator from New York, in a symposium "Freedom Without Fortresses? Shaping the New Secure Environment," at the National Building Museum in Washington, D.C., on November 27. The symposium, cosponsored by ARCHITECTURAL RECORD, the American Institute of Architects, the Urban Land Institute, and RTKL, explored the impact of the September 11 attacks on the built environment.

Moderated by Robert Ivy, FAIA, editor in chief of ARCHITECTURAL RECORD, the panel addressed questions related to urban planning, psychology, and public spaces. Harold L. Adams, FAIA, RIBA, JIA, chair of RTKL, introduced Moynihan, who said public buildings must have free and open access. "Architecture is inescapably a political art and it reports faithfully for ages to come what the political values of a particular age were," Moynihan said. "Surely ours must be openness and fearlessness in the face of those who hide in the darkness. A precaution, yes. Sequester, no."

Other speakers included architect and planner Jonathan Barnett, FAIA, AICP; Richard Farson, president, Western Behavioral Sciences Institute; and Jeri Thomson, secretary of the U.S. Senate.

Farson, a psychologist, spoke of the psychology of security and the paradoxes and unintended consequences of security measures. He said, for example, "The paradox of national success is that our very strength makes us vulnerable—our power, our wealth, our standard of living, our influence, and a complex, target-rich environment."

Brief responses to the presenters were offered by a number of experts. For a full list of speakers and more about this event, visit www.archrecord.com/wtc *JEC*



Symposium participants (from left) Daniel Patrick Moynihan, Richard Farson, Robert Ivy, FAIA, and Harold L. Adams, FAIA, with Farson.

Ground Zero panel discussion

The National Building Museum in Washington, D.C., will host a panel discussion, "From Ground Zero," at 6:30 P.M., Monday, January 28, with key figures that have been working at Ground Zero. Panelists include Daniel A. Cuoco, P.E., president and managing principal of LZA Technology, a division of the Thornton-Tomasetti Group; George J. Tamaro, P.E., partner, Mueser Rutledge Consulting Engineers; and Ralph Johnson, senior vice president, Turner Construction Company. Charles H. Thornton, P.E., chair and managing principal of Thornton-Tomasetti Group, will moderate the discussion. This event is cosponsored by the Associated General Contractors of America and the American Council of Engineering Companies. Visit www.nbm.org for more information.

Forensics engineering expert studying WTC steel to determine precisely how towers failed

Astaneh-Asl studies WTC steel.

Abolhassan Astaneh-Asl, P.E., a forensics expert and structural engineering professor at the University of California at Berkeley, is studying the World Trade Center disaster with the goal of improving skyscraper design. Using a grant from the National Science Foundation, Astaneh-Asl will test damaged steel from several portions of the towers and build a computer model, in conjunction with Lawrence Livermore National Laboratory in Livermore, California, to simulate the crashes, fires, and collapses. The lab has the computing power needed to recreate the disaster digitally. By varying model parameters such as column design, construction materials, and type of fireproofing, Astaneh-Asl hopes to find ways to harden future buildings against catastrophic failure.

Last September, Astaneh-Asl was part of a team from the American Society of Civil Engineers that convinced the city of New York to delay recycling the WTC steel so that some of it could be studied for clues to the collapses. At a scrapyard in Jersey City he has helped identify the steel pieces to be saved.

The most important structural steel members to study are those severed by the planes and those that sustained the heaviest fire damage. The severed members will be studied to determine the speed and force of impact. Fire-damaged steel will be examined under an electron microscope for changes to its crystal structure; material scientists can then determine how long fires burned and at what temperature the steel failed.

Astaneh-Asl will also study structural members relatively unaffected by the crash or fires. "'There were lots of different types of steel used in the towers—both high- and regular-strength—and we can learn things from pieces that fell hundreds of feet as the buildings collapsed," he explains. Tests can measure the robustness of bolts and connections, for example, and identify the types of steel adequate for various structures. *Deborah Snoonian, P.E.*

A New World Trade Center: Design Proposals

Co-curated by architectural record, the exhibition "A New World Trade Center: Design Proposals" will be held at the Max Protetch Gallery, 511 West 22nd Street, New York, January 16 through February 16. The exhibition will include sketches, renderings, and multimedia projects by established and emerging architects for the World Trade Center site. An opening reception will be held at the gallery 6–8 p.m., Thursday, January 17. For information, call 212/633-6999 or e-mail info@maxprotetch.com.

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CIRCLE 13 ON INQUIRY CARD

SPECIAL REPORT

First downtown N.Y.C. building completed post 9/11 opens

The first building completed in Lower Manhattan since the events of September 11, the Millennium Point building, has opened this month. Located five blocks south of Ground Zero on the southernmost parcel of Battery Park City, the 39-story building includes the first new hotel to open in the area since September 11, the Ritz-Carlton Downtown, which begins operation January 29.

Designed by Gary Edward Handel + Associates in collaboration with Polshek Partnership, the $175 million building includes the 298-room hotel on the lower 12 floors and the Residences at Ritz-Carlton, 113 condominium units, on the upper floors. The building, clad in brick with a glass curtain wall, will also house the new home of the Skyscraper Museum, an exhibition space dedicated to the history of high-rise buildings.

The Millennium Point building.

The hotel was originally scheduled to open October 9, but access to the building was hindered and construction could not be completed in the days after September 11. The building was not damaged, but the exterior had to be cleaned of excessive dust.

While the Ritz-Carlton has fantastic views of New York harbor, the recession, reduced tourism in New York City, and limited accessibility and amenities near Ground Zero will make filling hotel rooms a challenge. But Manfred Timmel, general manager of the new Ritz-Carlton, said there is still a demand for hotel rooms for business clients near Wall Street. The supply of available rooms in the area was diminished when the Marriott at the World Trade Center was destroyed and the Millennium Hilton was closed. *JEC*

Agency to lead rebuilding of lower Manhattan

An 11-member agency called the Lower Manhattan Redevelopment Corporation has been organized to help rebuild the area of New York City devastated on September 11, as well as revitalize all of Manhattan south of Houston Street. The corporation's responsibilities are vague, but it is likely to expend the federal aid given to New York and have the power to acquire properties for condemnation.

As a subsidiary of the Empire State Development Corporation, New York governor George Pataki has the power to appoint seven of the agency's 11 directors. Pataki named John C. Whitehead, a former chair of both the investment firm Goldman Sachs & Company and the Federal Reserve Bank of New York, as the corporation's chair on November 29. "This is a huge undertaking," Whitehead said of the rebuilding. "We want it to be done right, and we want it to be done well. How quickly it's done is not the primary concern."

Pataki's other appointments were Ed Malloy, president of the Building and Construction Trades Council of Greater New York; Lewis M. Eisenberg, who has resigned as chair of the board of commissioners of the Port Authority of New York and New Jersey; Roland W. Betts, the lead owner of Chelsea Piers; and Madelyn G. Wils, the chair of Community Board No. 1, which includes the financial district and TriBeCa; Frank G. Zarb, the former chair of Nasdaq; and Deborah C. Wright, the chief executive of Carver Federal Savings Bank in Harlem.

Former New York City mayor Rudolph Giuliani appointed four members to the board: Richard A. Grasso, chair of the New York Stock Exchange; Robert M. Harding, a deputy mayor for economic development and finance; Howard Wilson, the chair of the School Construction Authority; and Paul A. Crotty, a public affairs executive for Verizon Communications. *JEC*

WWW For continuous updates on the aftermath of the September 11 attack, visit our special section at: www.architecturalrecord.com

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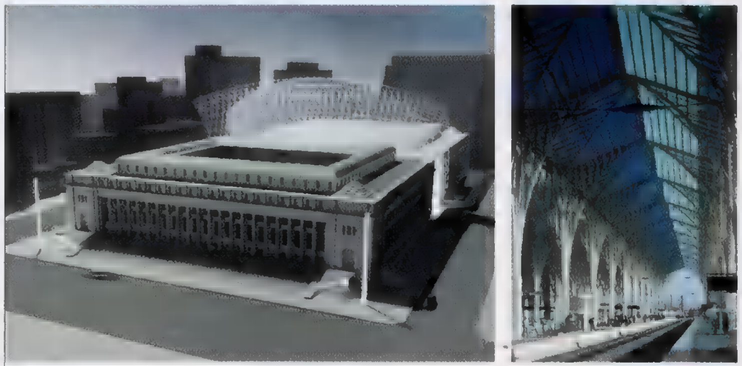

The new Penn Station (far left) and Calatrava's Orient Station in Lisbon, Portugal (left).

Rail station exhibition rolls into Chicago

The Art Institute of Chicago has opened an exhibition showcasing trains and the stations that house them. *Modern Trains and Splendid Stations: Architecture and Design for the 21st Century* features 30 station designs from San Francisco to Singapore, with substantial contingents from Europe and Japan, areas that have traditionally been strong markets for railroads. The Frankfurt Airport Railway station (this issue, page 120) is prominently featured, as are stations in Italy, Norway, and Switzerland.

The show reflects the recent surge in rail transportation in the United States. Not coincidentally, the exhibition's designers, David Childs, FAIA, and Marilyn Taylor, FAIA, of Skidmore, Owings & Merrill (SOM), also designed the proposed new Penn Station (above) in New York City, which would be built within the main post office building, across the street from the site of the station that was torn down in the 1960s. SOM's design features a towering, sail-like glass structure that would split the two wings of the post office building and mark the station's new main entrance. Several other projects in the exhibition reach the same level of monumentality.

The show is divided into categories: facilities for urban transformation; multipurpose stations; airport stations; new symbols for cities and towns; and architecture for innovation. Both commuter and intercity facilities are included. The exhibition also looks at designs for new trains, focusing on issues of passenger comfort, accessibility, and durability. Among the many architects whose projects are exhibited are Santiago Calatrava, Helmut Jahn, Bernard Tschumi, Norman Foster, and Shigeru Ban.

Modern Trains and Splendid Stations is on view through July 28. *Kevin Lerner*

Some firms hiring in difficult economic times

Despite the recession, some large architecture firms are hiring. ARCHITECTURAL RECORD contacted each of the firms in the AIA's Large Firm Roundtable in early December to get a sampling of the employment picture for the largest firms in the country at this difficult economic time. RECORD found that in many cases, if a firm was hiring, it was doing so very strategically and its employment needs were highly specialized. Some firms have had layoffs coupled with new hires to fill specific positions.

Shepley Bulfinch Richardson & Abbott (SBRA), a 237-person firm in Boston, hired 70 new employees in 2001 and was looking for more. "We are hiring," said Garrold E. Baker, AIA, SBRA principal. "We are looking for some senior positions in science and health care as well as senior design support."

OWP&P, a firm with 355 employees in Chicago and Phoenix, is hiring strategically. "At the moment, we are monitoring our resources week-by-week, perhaps a little more carefully than before," said Greg Surufka, AIA, chief operating officer at OWP&P.

Only a handful of the firms reported layoffs. Gensler, which had nearly 2,000 employees in mid-December after laying off about 300 people in 2001, was planning to hire 12. HDR Architecture, based in Omaha and with about 3,200 employees in 60 offices worldwide, had 80 layoffs in the past year, yet it was also hiring in engineering, management, marketing, and key specialized positions. HNTB Architecture has a hiring freeze in place but was planning to hire two senior-level persons in December after approximately 80 layoffs in the previous six months, 60 of which were in aviation architecture. Much smaller layoff totals were reported at FRCH Design Worldwide (30), Hardy Holzman Pfeiffer (11), CUH2A (3), Gould Evans Affiliates, Einhorn Yaffee Prescott, and HOK. ***JEC, with research by Christina Rogers***

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CIRCLE 18 ON INQUIRY CARD

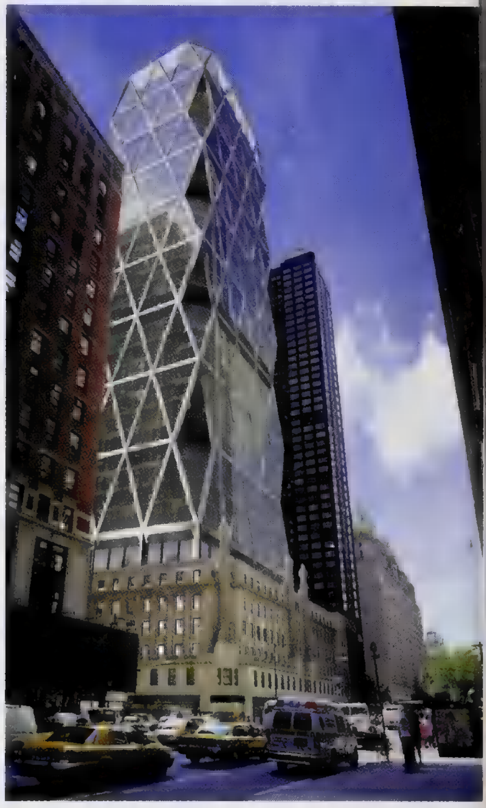
Foster proposes daring add-on tower for Hearst

The marriage of early-twenty-first-century Lord Norman Foster and 1920s Joseph Urban and George Post may sound like an architectural oddity, but it has been approved by the New York City Landmarks Preservation Commission. Foster and Partners has designed a 36-story-tower addition for the Hearst Corporation building—a 1928 six-story structure on Eighth Avenue at 57th Street in Manhattan designed by Urban and Post to be the base for a much taller building.

The Hearst Corporation hired Foster based on his tall building experience and his elegant additions to the Reichstag in Berlin and the British Museum in London [MARCH 2001, page 114]. While the existing Hearst building is not a national icon like the Reichstag and the British Museum, the Foster proposal has already generated discourse among New Yorkers regarding the appropriateness of the design. This is Foster's first New York project.

The glass-and-steel Foster tower is set back from the roof edges of the existing masonry building, so the point where old meets new will not be easily seen from street level below. A stainless-steel structural system comprising nine tiers of interlocking four-story triangles will be exposed on the exterior of the Foster addition.

With this tower, Hearst could consolidate all of its publications, now in a number of Manhattan offices, under one roof. Yet, like many publishing companies, Hearst has had a troubled year in the slowed economy. So construction of the tower, which is still pending City Planning Commission approval, is not certain. *JEC*



The planned Foster addition on the Hearst building.

Trump shows plans for 78-story Chicago skyscraper by SOM

While Donald Trump is no longer proposing the world's tallest building in Chicago, plans for his first Windy City skyscraper are still ambitious. Drawings of Donald Trump's first Chicago skyscraper were released in mid-December. He plans a 78-story building at 401 N. Wabash on the Chicago River, currently the location of the Chicago Sun-Times headquarters. Skidmore, Owings & Merrill, led by Adrian Smith, FAIA, is designing the building for Trump and Hollinger International, the publisher of the *Sun-Times*. The tower, which will rise 1,073 feet, will include 2.3 million square feet of space, including 1 to 1.6 million square feet of offices and up to 500 high-end residential units. It will be the fourth tallest building in Chicago, after the Sears Tower, Aon Center, and John Hancock Center. A three-tiered riverfront plaza (above left) with retail will face a promenade along the Chicago River. When Trump initially announced plans last summer to develop the site [SEPTEMBER 2001, page 40], Chicagoans speculated that he was proposing the world's tallest building. The decision to scale back the proposal undoubtedly was influenced by the slowed economy and the events of September 11. Pending city approvals, plans call for construction to start in 2003. *JEC*

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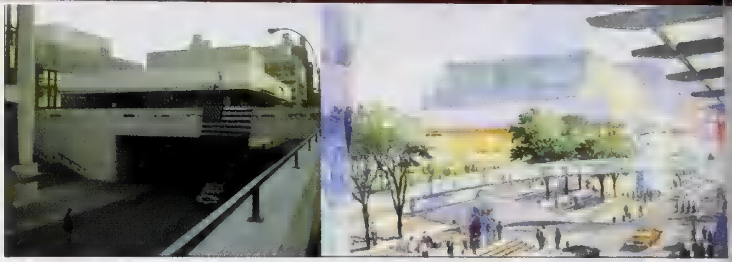
New York City reviews Lincoln Center plan

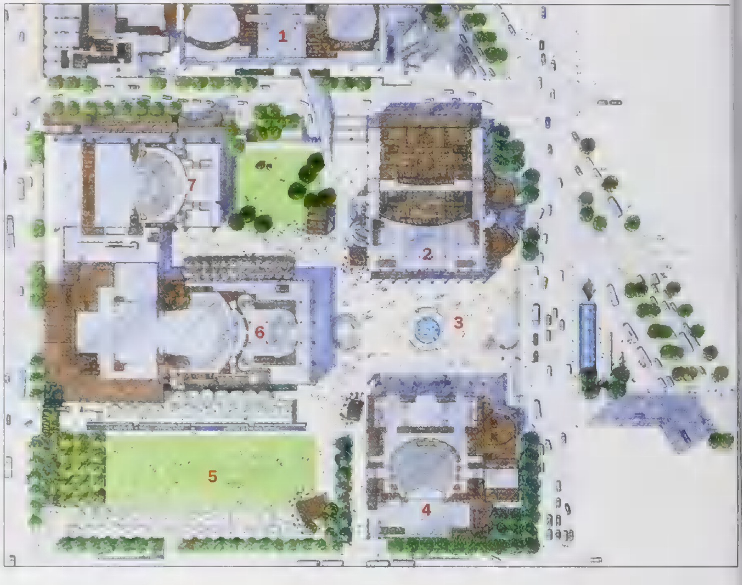


West 65th Street at Lincoln Center today (left) and how it may appear (right).

The $1.2 billion redevelopment plan for Lincoln Center for the Performing Arts was presented to then New York City Mayor Rudolph Giuliani last fall. At press time, Giuliani was expected to make an announcement in late December (before his term expired at year-end) on whether the project was to receive the promised $240 million in city funds. That promise was made early in 2001, before the New York economy was struggling and before a plan and schematic design were developed. When the mayor's announcement was made, details of the plan were to be made public.

While the plan in its entirety had not been made public, some portions were released (rendering and plan, right) in early December. Frank Gehry and landscape architect Laurie Olin are part of the design team, but the extent of Gehry's design work remained speculative. A glass-roofed public plaza enclosure by Gehry was on the table at one point but was discarded before the plan was submitted. Of the existing buildings, it remained unclear if any would be razed or if all would receive major renovation. The plan does call for transforming Damrosch Park into a greener space. Options are being explored to reconfigure 65th Street (above), Broadway, and Columbus Avenue to create a more pedestrian-friendly arrival to Lincoln Center.

With the support of new mayor Michael Bloomberg, who has been a member of Lincoln Center's board, the plan is expected to move forward despite the slow economy and difficulty in gaining consensus. *JEC*



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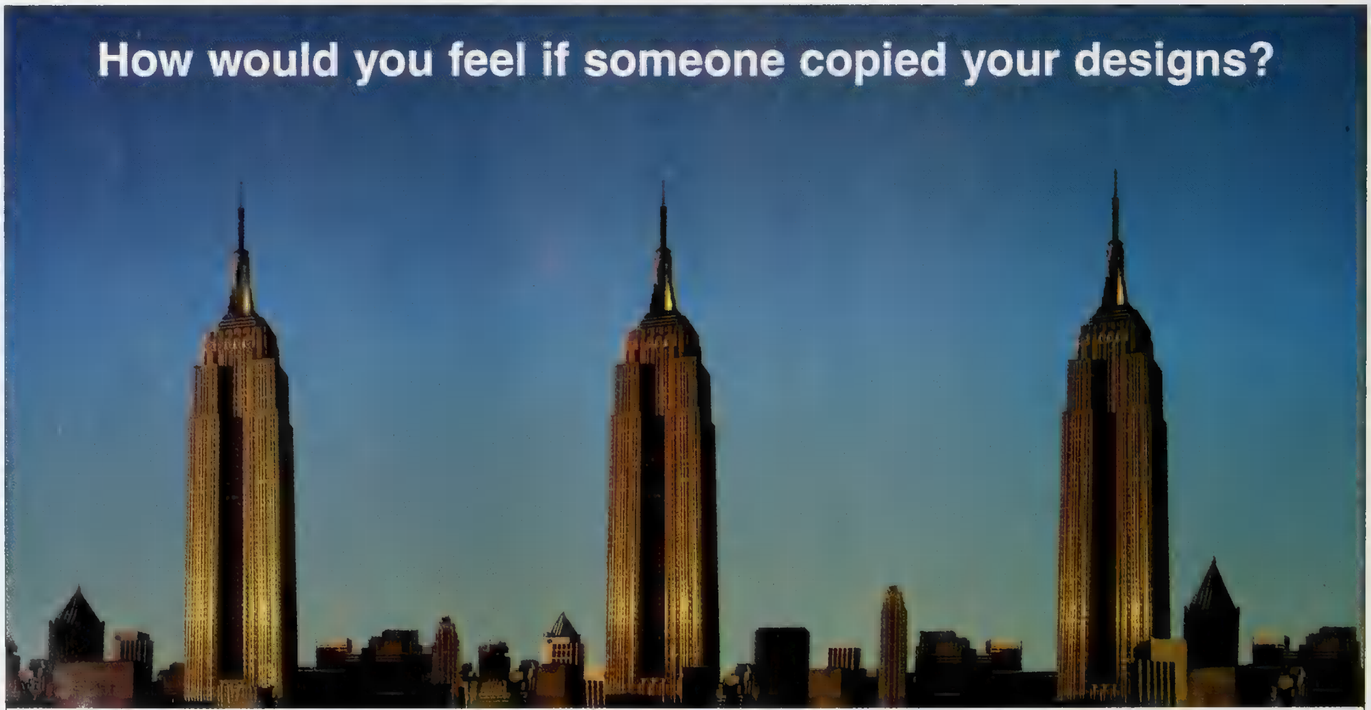
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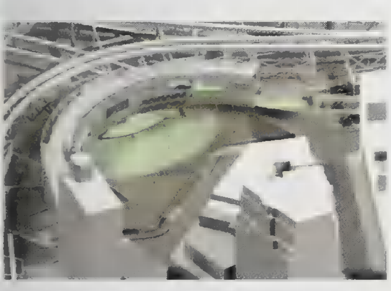
News Briefs

Queens Plaza winners announced Winners of the Queens Plaza design ideas competition were announced in New York in December. Sponsored by the Van Alen Institute, the competition sought urban design proposals for the subway and highway hub of Queens Plaza in Long Island City, Queens, New York. First prize (and $10,000) went to Surachai Akekapobyotin and Juthathip Techachumreon of New York City. They proposed a "media corridor" (below) to connect the subway stations, pedestrian routes, medians, and public spaces. The Amoebe Architecture partnership of Gisela Baurman, Birgit Schoenbrodt, Jonas Coersmeier, and Michael Biermer of New York took second prize. Lynn Hsu and Bradley Shanks of Cambridge, Massachusetts, took third prize. Six entries won honorable mentions. Launched in June 2001, the competition drew 191 entries from 17 countries.


Queens Plaza winning proposal.

Duany and Plater-Zyberk win Scully Prize Pioneers of New Urbanism Andres Duany, FAIA, and Elizabeth Plater-Zyberk, FAIA, were honored as the third winners of the annual Vincent J. Scully Prize in a December 16 ceremony at the National Building Museum in Washington, D.C. The Vincent J. Scully Prize recognizes exemplary practice, scholarship, or criticism in architecture, landscape architecture, historic preservation, planning, or urban design. Scully, the Sterling Professor Emeritus of the History of Art at Yale University, was the initial recipient. Author Jane Jacobs was last year's winner. The prize carries a $25,000 honorarium.

Plater-Zyberk (left) and Duany.

Toronto's ROM close to selecting architect The Royal Ontario Museum (ROM) in Toronto has narrowed its list of architects from 12 to three finalists for its $85 million expansion: Architetto Andrea Bruno of Turin, Italy; Bing Thom Architects of Vancouver; and Daniel Libeskind of Berlin. The three finalists will give public presentations of their proposals on February 11, 12, and 13, and a winner will be selected on February 15. The project will include substantial renovation of the museum's existing facility and a new wing with gallery and curatorial space, studios, workshops, labs, offices, restaurants and retail, a reference library, and two theaters. Created in 1912, ROM is the fifth largest museum in North America and Canada's largest.

Foster and Koolhaas win Dallas projects The Dallas Center for the Performing Arts has selected Foster and Partners and Rem Koolhaas and the Office for Metropolitan Architecture for two cultural projects. Norman Foster will design a 2,400-seat lyric theater for opera, ballet, musical theater, and other large-scale productions. Koolhaas was chosen for an 800-seat multiform theater with flexible stage space for theater, dance, and other performing arts. Construction on both buildings will begin in 2004 and be complete in 2007.

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Pillsbury Hall, one of the architectural treasures of the University of Minnes
was completed in 1889 as a home for the teaching of basic sciences. The Romanesqu
building was designed by noted architects Leroy S. Buffington and Harvey Ell

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A New World Trade Center: Design Proposals
New York City
January 16–February 16, 2002
An exhibition featuring sketches, renderings, and multimedia projects created by established and emerging architects in response to the need to rebuild on the site of the World Trade Center and embrace the future of New York. At the Max Protetch Gallery. For information, call 212/633-6999 or e-mail info@maxprotetch.com.

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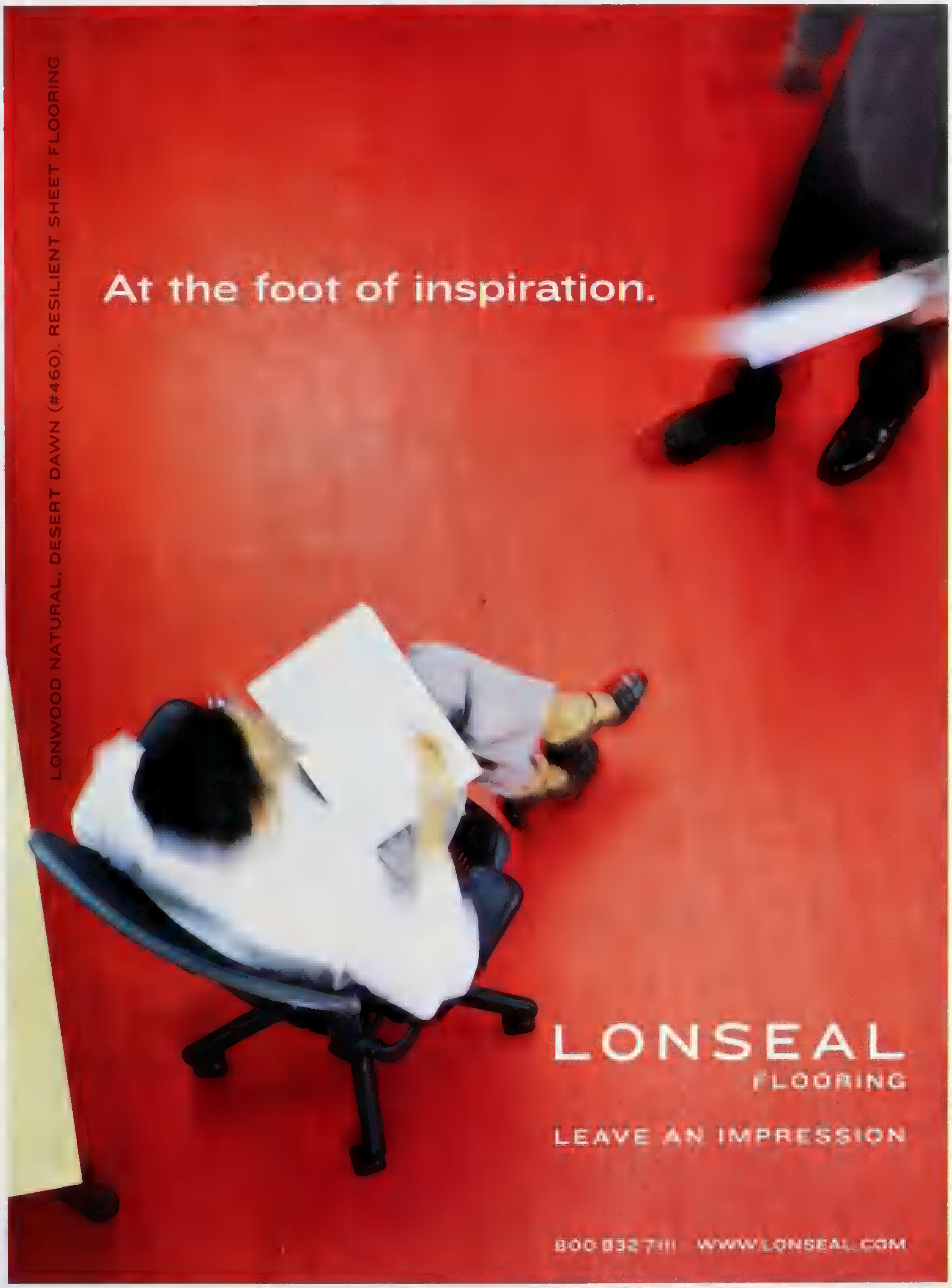
Washington, D.C.
January 30, 2002
Former New York City landmarks commissioner, Anthony M. Tung will explore the growing conflict between preservation and contemporary building pressures. At the National Building Museum. Contact 202/272-2448.

Business Week/Architectural Record Awards Conference
New York City
February 21, 2002
The Fifth annual Business Week/Architectural Record Awards Conference and awards presentation honors buildings based on their architectural excellence and the degree to which they advance the owners' goals. Information on the winners appeared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in the October issue of ARCHITECTURAL RECORD and the November 5 issue of *Business Week*. At the Rainbow Room. Contact amy_katz@mcgraw-hill.com or call the registration office at 800/371-3238.

Conventions

World of Concrete
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One of the largest annual construction trade shows, with more than 1,500 indoor and outdoor exhibits and more than 90 seminars concerning everything from the basics to specialized techniques in concrete design and technology. At the Morial Convention Center. For more info, visit www.worldofconcrete.com.

Restoration & Renovation 2002
Boston
March 21–23, 2002
Now in its ninth year, this conference and trade show gathers exhibitors, speakers, and experts from around the world to address contemporary issues in restoration and renovation of period buildings, interiors, and streetscapes. At the Hynes Convention Center. For more information, contact 800/982-6247 or visit www.restorationandrenovation.com.

Competitions

The NCARB Prize
Deadline: February 1, 2002
In an attempt to bring together the academy with professional practice, the National Council of Architectural Registration Boards offers a grand award of $25,000 for a fall 2001 term project that demonstrates this integration. For an entry packet, contact 202/879-0535 or Mbourdrez@ncarb.org.

Material Process: 2001–2002 Young Architects Forum
Deadline: February 20, 2002
The Architectural League of New York is sponsoring this competition, open to architects and designers 10 years or less out of undergraduate or graduate school. Winners receive a $1,000 cash prize, exhibit their work, and present lectures at the League in New York City during May and June . For more information and to get an entry form, call 212/753-1722 or visit www.archleague.org.

RIBA Competition
Deadline: February 28, 2002
Invited to explore the possibilities of environmental construction, the Government Energy Efficiency Best Practice Programme sponsored by the Royal Institute of British Architects has launched its fourth open ideas competition to promote sustainable architecture. Open internationally to students and architects, first prize is £10,000. Contact 01 13 234 1335.

2002 AIA Architectural Photography Competition
Deadline: March 1, 2002
AIA St. Louis presents the competition, which is open to all architects registered in the U.S., as well as associate members of the AIA and student members of AIAS. The top 14 entries will be exhibited at the 2002 AIA National Convention in Charlotte, N.C. Subject matter must be located in the U.S. Cash prizes will be awarded. For more information, call 314/231-4252 or e-mail bookstore@aia-stlouis.org.

Bus Shelter Competition 2002
Deadline: April 19, 2002
The Bloomington Community Arts Commission, in conjunction with Bloomington Transit, invites proposals for three new public bus shelters to be installed along a major thoroughfare that will be improved as part of a city-wide transportation project in 2002. For information, contact BloomingtonArt@aol.com or call 812/336-0564.

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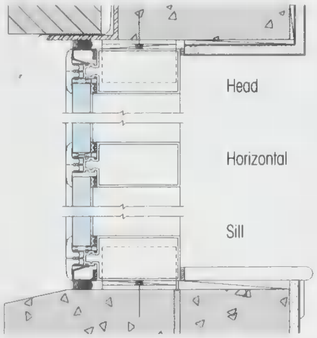

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CIRCLE 26 ON INQUIRY CARD

For and about the new generation of architects

archrecord2

FOR THE EMERGING ARCHITECT

This month's **archrecord2** is all about sound and architecture. In the building at right, Sarah Wigglesworth, a London architect, insulated the occupants from the thunder of the passing Great North Eastern Railway on its way to Scotland. And in Northern California, one band member looks around his house, a 1960s Joseph Eichler creation, and he hears music. And on the Web, you'll find a special **Work** feature. Just be sure to whistle while you read it.

DESIGN

Sarah Wigglesworth Architects

Sarah Wigglesworth dislikes stylistic labels for architects. She doesn't think that an architect's work needs to be pigeonholed or limited to being "high-tech" or "green." The best solution to a particular building problem, in her opinion, may lie in a combination of approaches.

"What's the best kind of insulation you can get for your money?" she asks, not entirely hypothetically. "Well, straw. What's the best kind of glazing?" she asks, by way of contrast. "Well, it's got to be very high-tech glass."

This adaptability displays itself in Wigglesworth's most important project to date, 9/10 Stock Orchard Street, a combination residence and office for Wigglesworth and her partner, Jeremy Till. Indeed, Stock Orchard Street uses such energy-efficient materials as straw bales and recycled concrete, but contrasts them with slick, clean lines in other parts of the structure. All of these solutions address specific building problems, as well. For instance, a wall that faces the main rail line between London and Scotland is covered in concrete-filled bags, which dampen the sound of the trains that rush by every ten minutes.

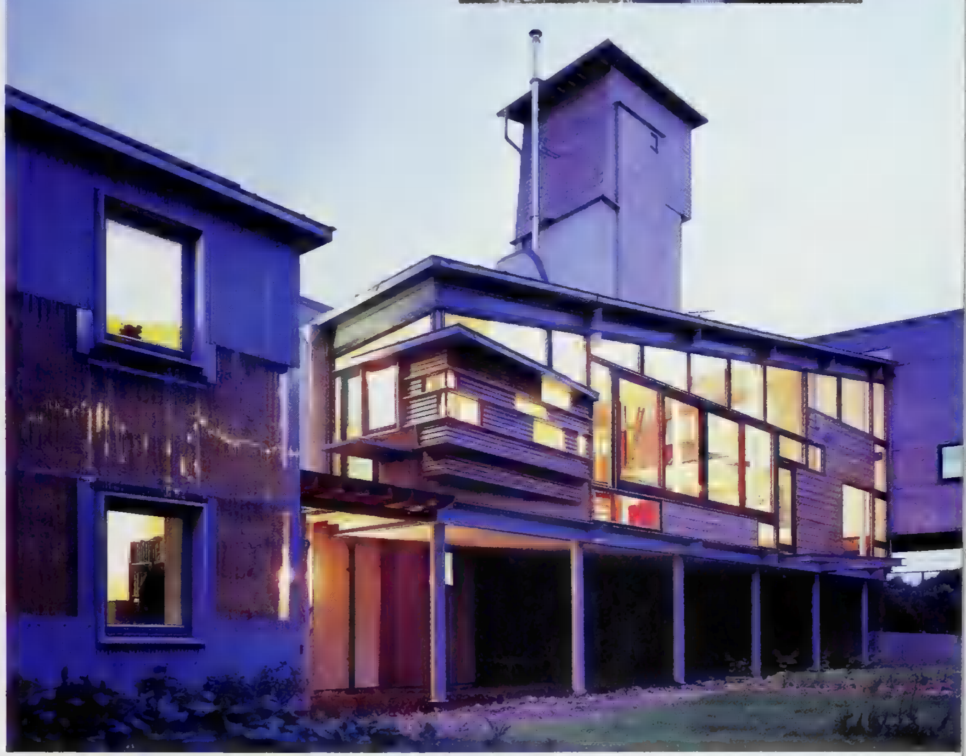
Stock Orchard Street began as a project when Wigglesworth decided to take control of her career and expand beyond the usual small residential projects that London architecture affords.

"I'm not well-connected, and I don't know lots of millionaires, and I haven't won any competitions," Wigglesworth said. "So that's how it all started, really."

And "it" has finally started in earnest for Wigglesworth, though she had to pare her staff down considerably during work on Stock Orchard Street.

"It became so all-consuming that I had to let all my staff go in order that I could focus on the project," she said. "It was taking so long and not taking any sums in that we couldn't afford to keep the practice going. At one point we were working at the building site and living there as well."

But now, with that project more or less complete and gaining some attention in the U.K. and beyond, the investment of time and money in Stock Orchard Street



9/10 Stock Orchard Street, London, 2001

Sarah Wigglesworth Architects. A combination of a house and the architects' offices, the building employs unorthodox materials such as concrete-filled sandbags, straw bales, and quilted cloth.

(continued from previous page) **is paying off. And while the firm's direction from here on may not be entirely clear, Wigglesworth is bursting with ideas.**

"One thing people say about Stock Orchard Street is that it has too many ideas in it, which I readily acknowledge," she says. "Any one of those ideas is something you could take as the basis of another project and run with."

And those projects are no longer just the typical residential renovations: She is working on a school, a project for a dance company, and a display for the Chelsea Flower Show. Again, Wigglesworth's adaptability serves her well.

"We don't really mind what sort of project we do," she says, "as long as it has an interesting brief to it." ***Kevin Lerner***

Go to architecturalrecord.com/archrecord2 for more on Sara Wigglesworth, and to submit your own projects.

Writer's Retreat, London, 1999

Sarah Wigglesworth Architects. Made from prefabricated parts, this summerhouse serves as a writer's workspace.

LIVE

Orange Peels and Eichlers

Joseph Eichler built nearly 11,000 tract homes in Northern California between 1949 and the early 1970s that came to personify the spirit of California living at the time. The Eichler homes, mostly single-story houses with flat roofs, floor-to-ceiling glass, radiant-heated floors, and atrium gardens, were modest and modern, appealing to the parents of the Baby Boom Generation. Today, thanks to both nostalgia and skyrocketing home prices in Silicon Valley, the Eichlers appeal to a whole new generation of homeowners. That generation includes Allen Clapp, leader of the band the Orange Peels (www.theorangepeels.com).

The band's warm, 1960s-pop-influenced songs (think Beach Boys) are a perfect soundtrack for life in an Eichler house. The Orange Peels are (photo, clockwise from top right) Allen Clapp (with glasses), Jill Pries, Larry Winther, Bob Vickers, and John Moremen.

Both in his music and his house, Clapp is living the Eichler lifestyle. "There's a simple, elegant geometry in Eichler homes, and our songs reflect that," he says. "There's an optimism, too. Eichler improved quality of life, and, as a band, we're trying to do the same thing."

Clapp grew up in an Eichler house in Foster City, California. "It formed my opinion of what a house should be, and little did I realize that not everyone grew up in a house like this," he said. "I just always had this fascination with buildings that looked like my house."

Clapp remained interested in Eichlers, and, in 1999, he and his wife bought a 1,500-square-foot vintage 1961 Eichler (above). The Orange Peels recorded their second album, *So Far*, in Clapp's garage, and plans to record the next album in the house. *JEC*

To hear Orange Peels songs, visit architecturalrecord.com/archrecord2

On the Web, archrecord2 presents a series of articles about how emerging architects shape their careers. The first installment, focusing on Web sites, can be found at **architectural record.com/archrecord2**, along with our monthly forum.

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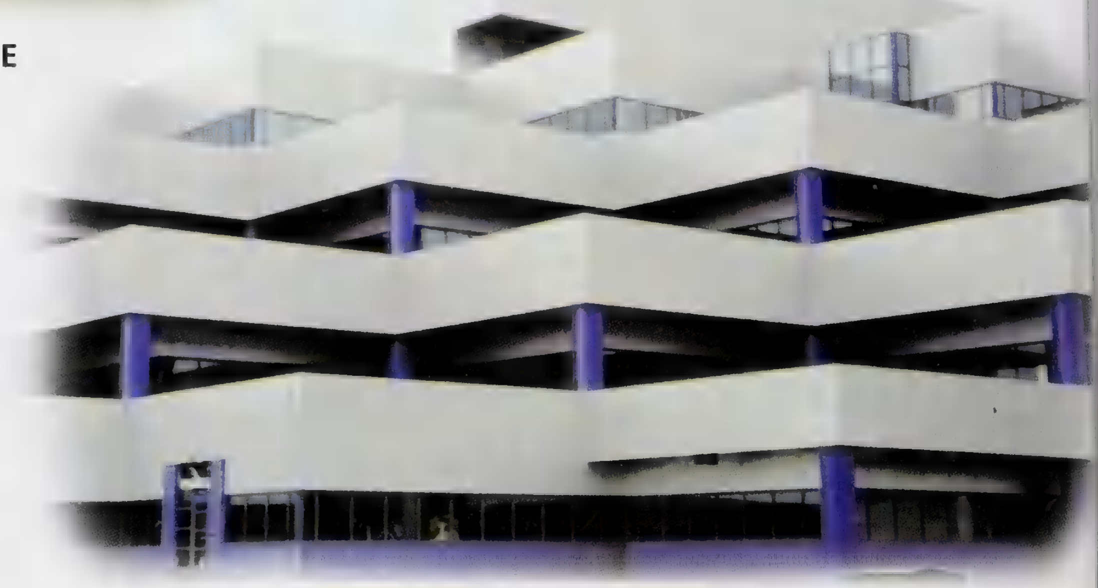

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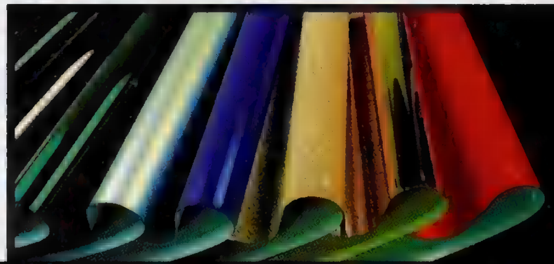

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LACMA makes radical conservative choice with Koolhaas

Correspondent's File

By John E. Czarnecki, Assoc. AIA

A simple, elegant design by Rem Koolhaas for the Los Angeles County Museum of Art (LACMA) may go beyond LACMA's need for additional space—it may in fact help to redefine the museum.

LACMA selected Rem Koolhaas's firm, Office for Metropolitan Architecture (OMA), on December 6 in an architectural competition for its $200 million renovation and expansion. A selection was expected to be made in late September, but the events of September 11 delayed the decision. In November, the museum narrowed its field of finalist architects from five to two: Koolhaas and Jean Nouvel. The finalists, each of whom received $200,000 to prepare schematic designs, included Daniel Libeskind, Steven Holl, and Thom Mayne of Morphosis. Construction will begin in 2004, at the earliest.

Radical and conservative

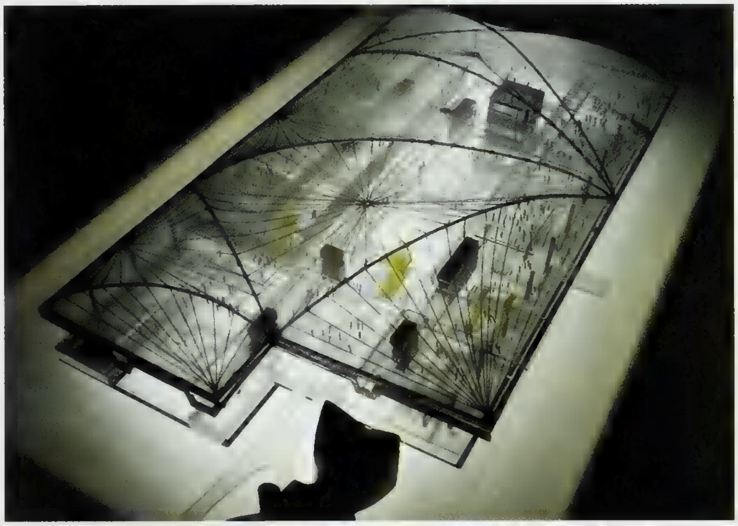
On one hand, Koolhaas's design is the most radical of the five finalists' because his scheme calls for the most demolition. In fact, he proposes tearing down most of the existing buildings on the LACMA campus and constructing a single, rectangular, three-level building with a translucent roof. He will fundamentally redesign the museum.

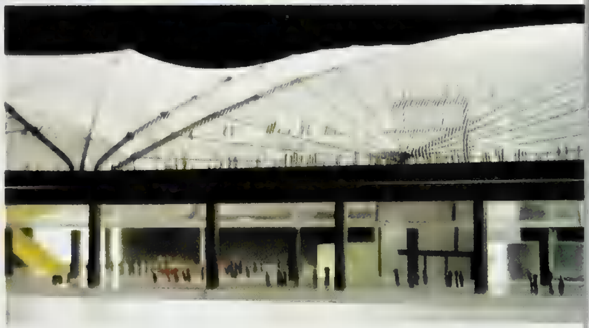
"[Koolhaas] knocks down our old buildings and on top of that he builds a twenty-first-century museum built for adaptability and changing technologies," LACMA president and director Andrea Rich told RECORD. "It physically represents optimism and faith in the future."

The new museum would be built above existing administrative and curatorial offices that will be preserved below grade. On top of this "Pompeian base," the ground-level plaza will have lobbies, special exhibition space, theaters, shops, and restaurants. Grand staircases will provide access from the parking structure, Wilshire Boulevard, and Hancock Park. LACMA's permanent collection—with departments for American, Asian, Latin American, European, Modern, and Contemporary art—would be on the top floor, arranged chronologically.

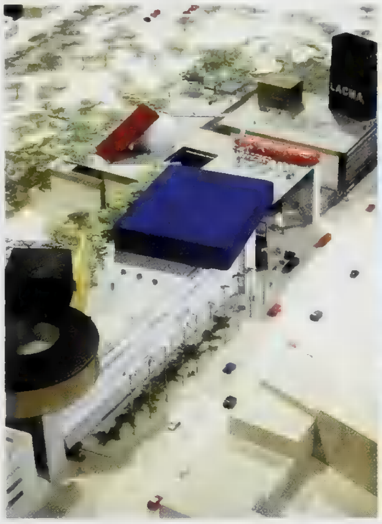
The Koolhaas design is also the most fiscally conservative of the five because about 85 percent of the budget will be put into new construction, and exhibition space could potentially be doubled under one roof. The other four schemes each required at least 50 percent of the budget to go toward existing building renovation. According to estimates by cost consultants Davis Langdon Adamson, Koolhaas's plan will cost approximately $187 million and Nouvel's scheme, which would keep all existing buildings, would be $230 million.

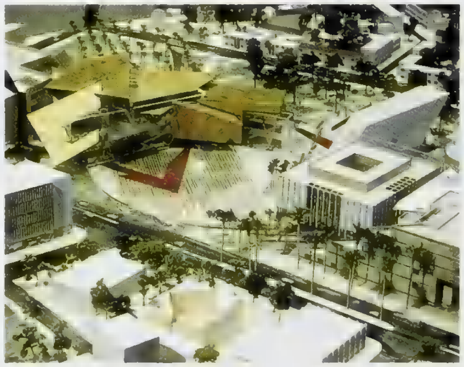
LACMA's Wilshire Boulevard campus is an amalgam of structures that began in 1965 with the original three—Ahmanson Building, Hammer Building, and Bing Theatre—by Los Angeles architect William L. Pereira. A plan by Mies van der Rohe, favored by then director Richard Fargo Brown, was rejected by museum trustees. An addition to the Ahmanson Building was built in 1983, and the Anderson Building by

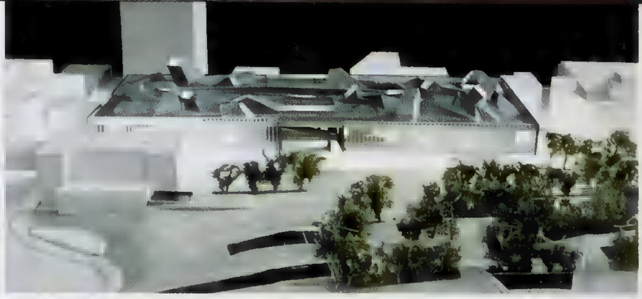


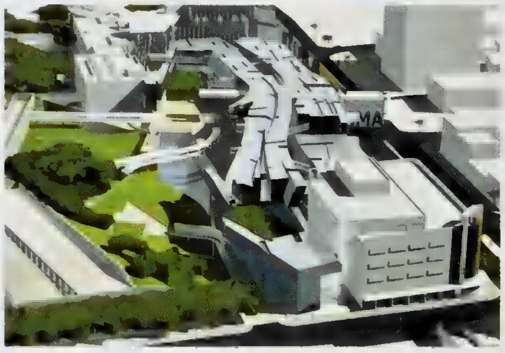


The Koolhaas design (above and right) includes most museum uses under a translucent plastic roof. Nouvel's scheme (below) proposed existing building renovation with new construction tying it together.









Proposals by Steven Holl Architects (top), Thom Mayne of Morphosis (left), and Daniel Libeskind (far left). The models and drawings of the five finalists' schemes are now exhibited at LACMA.

Hardy Holzman Pfeiffer was added in 1986. The Japanese Pavilion, designed by the late Bruce Goff with design development by Bart Prince, was completed in 1988. LACMA West opened in 1994 one block to the west in the former May department store 1940 Moderne building.

When LACMA initiated this architect-selection process, it planned to demolish the Ahmanson Building only. Koolhaas nearly wipes the slate clean with plans for demolition of all LACMA buildings except LACMA West, the Japanese Pavilion, and the parking structure. The Bing Theatre, with its walls removed, would be transformed into an open-air amphitheater.

Rather than opting for one additional building on a patchwork museum campus, LACMA is declaring with the selection of the Koolhaas design that its moment to redefine itself is *now.* Selecting Koolhaas has broad implications for LACMA. "It's the singularly most important choice for the museum since it opened," Rich said. "To bring someone like Koolhaas to L.A. is a great civic contribution to the city."

Evolving L.A.

LACMA follows a number of Los Angeles museums that have had major construction projects in the past decade, including the Getty Center. Rich says Koolhaas understands Los Angeles's evolving socioeconomic diversity and how a museum must adapt to fluid demographics. "L.A. has become this incredibly mobile culture. It's one of the great diverse and dynamic cities in the world," Rich said. "This is a moment to stop and take stock of the city and our collections."

A December 12 *Los Angeles Times* editorial declared that LACMA, together with the Getty Center, Disney Hall, and Rafael Moneo's downtown cathedral, ends the "timidity" in L.A. architecture: "Finally, the United States' second-largest city has confidence." ■

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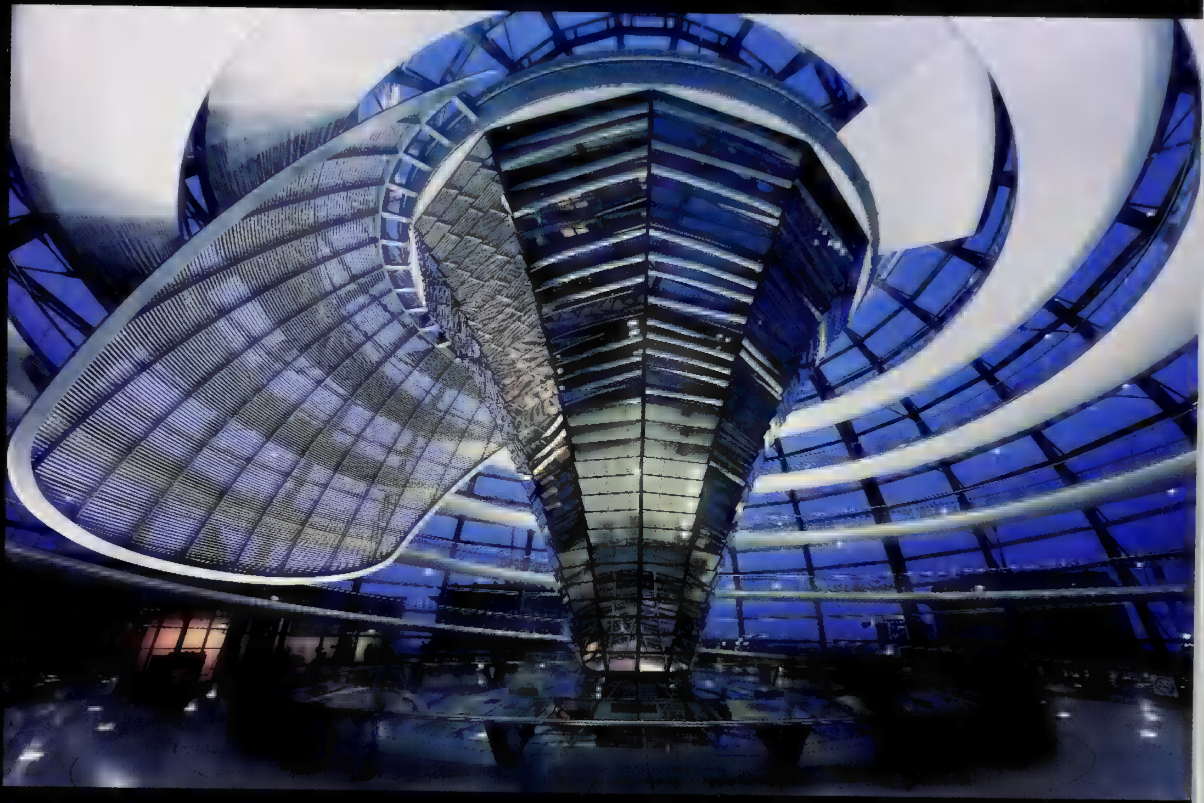

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CIRCLE 31 ON INQUIRY CARD

Riff on Rem: Sorkin's take on multinational style

Critique

By Michael Sorkin

Woke up to the Sunday *Times* to find the architecture critic again unhinged by the object of his affections. This time, a gushing review of Rem Koolhaas's boutique for Prada on Broadway, which opened to the full Hollywood: klieg lights, limos, blocked streets, and paparazzi. The *Times* well-timed coverage (only 10 shopping days until Christmas) was bolstered by a sidebar hyping another overweight book from OMA, this one about Prada, a classic merchandising tie-in. (You've seen the movie, now get the action figure at Burger King.) The book includes lists of key concepts ("shops should not be identical"), pictures of handbags and of cardboard study models, larded with images of the master, photogenically craggy and dressed in clerical black.

I understand Prada to be an upmarket Tommy (Hilfiger, that is, whose hideous retro boutique recently opened on the other side of SoHo), an amplification of traditional shapes and styles, refinements. Prada's corporate culture is likewise geared to the shopping theory of creativity. Another tie-in piece in the *Times* chronicled the company's recent rapid expansion: "Over the course of its buying spree, Prada acquired controlling interest in Jil Sander, Helmut Lang, Church's shoes, Azzedine Alaia, Carshoe and the Genny Group, along with a sizeable chunk of Fendi."

Michael Sorkin is the director of the graduate program in urban design at the City College of New York and practices architecture. He alternates each month with Robert Campbell in writing the Critique column.

The architectural haberdashery of the shop (which occupies much of the former space, and is twinned with the remnant of, the downtown Guggenheim) similarly compiles brands within the brand—a boutique of received forms—from the Dan Graham light boxes to the Venturiesque supergraphic wallpaper to the Portmanoid glass elevator, the SITE-like objects hung from the ceiling, and the Diller + Scofidio video cams in the dressing rooms, the disco Mylar on the ceiling, the pulsing techno, the personnel dressed in security gray, whispering urgently into their mouthpieces. This conflation of shopping with invention is the *philosophy* embedded in both the shop and its massive apology. The store becomes museum and vice versa. Fabulous.

The main architectural move is sectional, a wooden wave that dips from the first floor to the basement and back, providing seating and a display surface for shoes. The wave is the Koolhaasian portmanteau metaphor and his logo for multinationalism, his site. The architect's a surfer, the cool individualist who rides but does not pretend to tame the massive hydraulics of the system. Architecture makes multinational culture look good, all the while compiling a massive documentation of its nightmarish qualities just to keep critical distance.

What we have here is the post–Organization Man, Madison Avenue approach to architecture, spinning the creative wheels to make the sale. In a 1991 book, *What's the Big Idea? How to Win with Outrageous Ideas*, George Lois, legendary 60s adman writes, "Advertising should stun momentarily … it should seem to be outrageous. In that swift interval between the initial shock and the realization that what you are showing is not as outrageous as it seems, you capture the audience."

Koolhaas's Prada boutique is a conflation of shopping with invention.

The 60s were a watershed for the ad business and the formative era for Koolhaas. Hip ad people broke the mold of traditional advertising, with its stodgy formats and endless mock social-scientific and statistical research, with new "creative" approaches. The working method was co-optation: The legendary ads of the period took on the rebellious, teasing style of the counterculture, snoot cocked at the same corporations whose products they were promoting. Discarding the buttoned-down look, the ad business wore flowered shirts and ponytails, smoked pot in their boardrooms.

The Koolhaasian project merges both 50s and 60s Madison Avenue styles: from the 50s, the authority of "objective" statistical information, the conflation of marketing and taste, with its barse-ackwards formulas of legitimation. From the 60s, radical chic.

Advertising is the crèche of postmodernity and its professionalized ambivalences, the birthplace of the multinational style. Rem becomes Rem ©. OMA becomes

AMO. The idea of resistance, of friction, is lost in the go-with-the-flow. For the post-Andy generation, the subject matter of art can only be anxiety and ambivalence, and Prada drips with it. Rem is our dark Seinfeld, producer of our *Truman Show*.

When Rem first began his Harvard operation, he called it the "Project on What Used to Be the City" (in a massive loss of nerve, it is now rebranded the "Harvard Project on the City"). This nominalist dodge was surely intended both to signal a fascination with the "post-urban" forms of globalization and its degraded universalism, and to put some distance between himself and the more prescriptive styles of contemporary architectural debate (eyes rolled at anyone still flogging the dead horse of humane urbanity).

The reticence is a commonplace: Our legacy from utopian Modernist urbanism is postmodern urban despair—suspicion and dystopia, and a fascination with weirdness. Modernity is the Taliban, something we can all oppose. Rem's fascination with this urban *other* may spring from formative years in colonial Indonesia: The writing presents us with the Conradian gloom of the colonizer with a conscience, helpless before the horror.

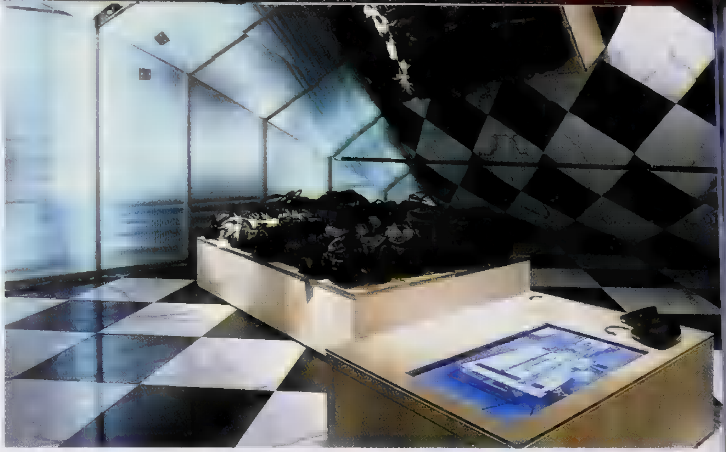
In this portrait of urban hyperbole, suspicion attaches to any optimism for the future. The association of optimism and totalitarianism is foundational Koolhaas: Called the most gifted architectural polemicist since Le Corbusier, the comparison is apposite, if complicated. Koolhaas uses the epithet "optimism" to jeer at the Corbusian fantasy of power and to reveal his own deepist value: pessimism. The writing exudes it, colorfully acid descriptions of onslaught globalization and its weird generic architectures, couched in the prosody of enthusiasm. Backed by corporate organizational diagrams, charts of travel schedules, and a thousand neat hierarchies, the sellout becomes the marker of the ingenuity of the critique: embodying the contradiction escapes it. Architecture is performance art.

The Godardian tone of the writing—flat, ironic, Johnny Halliday voice-over as he drives through the *Alphavillian* night—disclaims optimism and mocks totalitarianism. Koolhaas treats urbanization like nature, a huge sweep of forces, rules without agency, the landscape of his bitter sublime.

He describes Lagos, the Pearl River Delta, Atlanta with stylishness and insight. The prose is honed and cooly enthusiast, a deadpan Tom Wolfe. But what actually is his position on the city? He writes, "If there is to be a new urbanism, it will not be based on the twin fantasies of order and omnipotence, it will be the staging of uncertainty, it will no longer be concerned with the arrangement of more or less permanent objects but with the irrigation of territories with potential."

"Staged uncertainty" sure sounds like the 60s to me. "More or less permanent" recalls the first-do-no-harm techno fantasies that yielded such product as equipotential space, support structures, megastructures, flexible modules, user-change—the last gasp of Modernist urban science fiction and its precybernetic technical fix. A massively noncommittal space could liberate everyone: By predicting nothing, it would accommodate everything. The city would be a series of laminations that serve its shopping subjects by smoothing the flow of traffic, allowing efficient circulation between a narrowed set of architectural certainties produced by the wisdom of the market.

After working through such post-urban paradigms as bigness, sprawl, hyperdevelopment, and retail, Rem's Harvard (the Prada of universities) research project has turned its attention to the techniques of Roman city building, investigating especially its style of code making. This reversion is produced by the generic city,



An amplification of traditional shapes and styles, the Prada store's design echoes Prada's corporate culture, geared to the shopping theory of creativity

which must inescapably turn to type for the means of its own inhabitation. Built up of standard components, the generic requires a basic gene pool of building types that can take on a variety of recombinant forms.

For Koolhaas, historicism stands in for prescription. The Village Green, the Constructivist archive, Coney Island, Vegas, and Ancient Rome are ideal post-Modern enthusiasms: all understood at a distance. One as easily imagines Robert Venturi playing craps as Rem Koolhaas riding a roller coaster. Having fun is not the point. The professional objects of Rem's sly veneration—John Portman, John Jerde, Wallace Harrison, etc.—are all big American men representing big American business, druids of a practice in which innovation is largely technical and organizational.

FOR THE POST-ANDY GENERATION, THE SUBJECT MATTER OF ART CAN ONLY BE ANXIETY AND AMBIVALENCE.

There's a hint of shame behind this nostalgia, the taste that dare not speak its name. Koolhaas clearly adores the actuality of postwar Modernism, the repetitive blocks of the Albany Mall or downtown Stockholm, the thin curtain wall of Lever House, the '64 World's Fair. I can understand this: I grew up on Vallingby and Scandinavian Modern. It's like liking Vanilla. Ditto the thin columns, strip windows, and lifted volume of the Villa Savoie and the compulsive repetition of the Ville Radieuse. Rem's projects are darkly traditional, ironic sequels, Mies III.

The remorseless, addictive celebrity and rapier prose obscure a old-fashioned whine of alienation and a complete refusal of risk. Although he has helped open interesting territories for analysis, Koolhaas's project excludes any idea of subjectivity beyond hedonism or slavery, and any optimism for anything but the bottom line. With world-weary resignation before corporate "nature," the voluminous oversimplification, the campiness, the fogy disdain for the political, the ironic combination of criticism with celebration, all mark the larger failure to ever tell us what he really wants (so uncool).

But there must be at least one relevant urbanism somewhere between hysteria and totalization, perhaps in places to which we've turned a blind eye. The neo-liberal, economic version of rationality is soulless and converts our affections to commodities. The asphyxiating environment, the grossly uneven distribution of resources, the repression of the regimes—Singaporean, Chinese, Nigerian—that run these fascinating cities, the lived lives behind the defensive walls of the compounds in Lagos or in the jerry-built apartments at the edge of the Chinese town that are replacing traditional bustling neighborhoods, the sheer stupidity of the culture of consumption, are not to be desired. A useful urbanism needs to take a stand about what is. ■

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Ando's work teaches us not to judge a package by its wrapping

Exhibitions

By Mildred Schmertz, FAIA

Tadao Ando: Architect. *Saint Louis Art Museum, St. Louis, Mo. (October 6–December 30); Mass MoCA, North Adams, Mass. (spring 2002). Curated by Cara McCarty, Grace L. Brumbaugh, and Richard E. Brumbaugh.*

Tadao Ando is an architect's architect, long admired by members of the profession but little known to the general public. Just awarded the AIA's 2002 Gold Medal, Ando had already earned the Pritzker Architecture Prize in 1995 and the Royal Gold Medal of the Royal Institute of British Architects in 1997. His work has appeared in major architectural exhibitions, both here and abroad, and is faithfully covered by the architectural press. But few Westerners have visited his buildings, because most of them are in remote locations in Japan. With the opening late last year of the Pulitzer Foundation for the Arts in St. Louis, however, many more people will now have the chance to experience Ando's architecture firsthand.

The Pulitzer project is the architect's first public building completed in the U.S., after a private house in Chicago [RECORD, April 1999, page 132] and a gallery at the Art Institute of Chicago [RECORD, September 1992, page 86].

In a commendable collaboration, the Saint Louis Art Museum opened an exhibition of Ando's work early last October, to complement the debut of the Pulitzer building. The exhibition moves this spring to Mass MoCA in North Adams, Massachusetts.

The show presents 15 projects, including the Pulitzer building. Designed by Ando himself, it is subtle and slow to unfold. Like much of Ando's work, it doesn't give everything away at once. Cara McCarty, the museum's curator of decorative arts and design, notes that exhibitions of architecture—which usually rely on photographs, drawings, and models—can only suggest space, form, and materials. Because few people in St. Louis were familiar with Ando, McCarty saw an opportunity to educate. "We hoped to help make the Pulitzer building comprehensible to laymen by placing it in the context of Ando's body of significant work," she says. The nature of Ando's work—the way he distills his architecture into fundamental forms—helped make McCarty's intent clear. "Since we intend to teach, he is the perfect architect to focus on," she explains, "because his work is about the pure elements of architecture—site, nature, walls, uses of light."

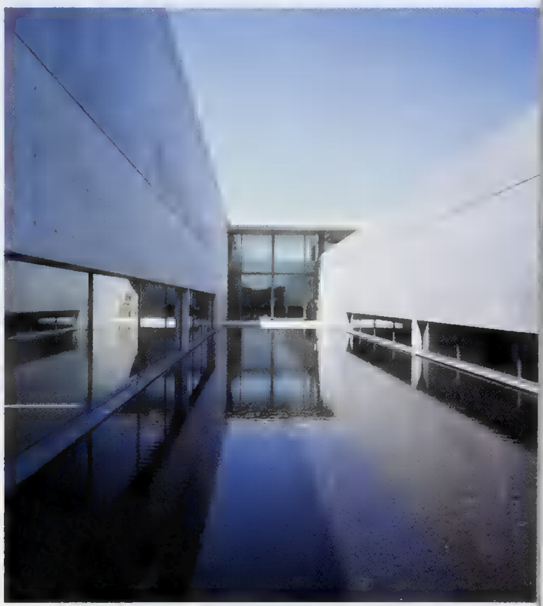
More U.S. work to come

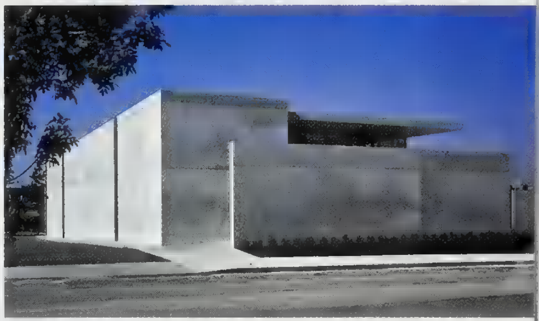
In addition to the Pulitzer building, the exhibition shows two yet-to-be-completed projects in the United States: the Modern Art Museum in Fort Worth, Texas (which is adjacent to Louis Kahn's Kimball Art Museum and will open later this year), and the competition-winning design for an Alexander Calder museum in Philadelphia. It also includes the Fabrica complex, a project for Benetton outside of Venice, which combines a renovated seventeenth-century Palladian villa and a mostly underground new structure [RECORD, January 2001, page 80]. And for those who remember Ando's beautiful little Japanese churches of the late 80s, all three are included: the Chapel on Mt. Rokko; the Church on the Water on the island of Hokkaido; and the Church of the Light in Osaka. Two early houses are shown, the Azuma House (1976) and the Koshino House (1984), as well as Time's Shopping Center in Tokyo (1984).

The decision to exhibit eight museums in a total of 15 projects provides the intended context for the new Pulitzer building. But had the show been bigger, it might have included more of Ando's many spare, unadorned, but geometrically ingenious concrete houses, as well as his two splendid exhibition buildings: the Main Pavilion for the Tennoji Fair in Osaka (1987) and the Japan Pavilion at Expo '92 in Seville, for which he explored new themes. That said, all the selected projects were displayed simply, without crowding, in the old-fashioned way—photographs, drawings, and models—no videos, films, or sound. Visitors first see a dramatically charged installation piece, set in a generous space just beyond the entry. It consists of a softly lit wall suspended above a void spanning a pebble-filled pool. It was designed by Ando to symbolize the fundamentals of his architecture: light, wall, texture, reflection.

Visitors to the Pulitzer Foundation for the Arts who have

The uninflected exterior of the Pulitzer Foundation for the Arts (bottom) offers no clue of features inside—like a water court (below).





RECORD's former editor Mildred Schmertz is a contributing writer for Architectural Digest.

Ellsworth Kelly's *Blue Black* hangs in the Pulitzer Foundation's main gallery.

already seen the museum exhibition may have learned that the genuine power of Ando's architecture is experienced inside, rather than outside his buildings. The exterior facades of the foundation building, deemed "bunkerlike" by many, consist of bare concrete walls that offer no clue as to what may be going on within. This cool demeanor reveals the truth about the building's function—that it is more private than public. (Visiting hours are on Wednesdays and Saturdays only, reservations are required, and a maximum of 50 people are allowed in at one time). This restriction on public access by a nonprofit institution receiving tax benefits has angered some alert citizens. The foundation, established by art historian and collector Emily Rauh Pulitzer, the widow of publishing magnate Joseph Pulitzer, Jr., exhibits art on loan from the immense and distinguished private collection of the Pulitzers and is primarily a study center for students of art and architecture.

Playing a Japanese game

Ando's building houses the foundation's art galleries, offices, and research facilities. The site—in the neglected Grand Center district of St. Louis—is flat, and the building fills it, with no room for landscape. The uninflected entrance facade (try to find the door) abuts the sidewalk, and the parking lot pulls up directly to the facade around the corner from the entrance. An empty lot next door adds to the forlorn look of the area, but it will be the home in 2003 of the Forum of Contemporary Art designed by Brad Cloepfil of Allied Works Architecture in Portland, Oregon. The Pulitzer building, understated and underplayed from without, represents Ando at the height of his game, and a very Japanese game it is.

Anyone who visits famous temples, gardens, or houses in Japan finds that some of them don't look like much from the street. Once inside, though, one discovers the multileveled, ingeniously structured enclosures, the beautifully proportioned open space, the carefully created vistas of water and sky, and the objects of art well placed in their surroundings. It is an experience all the more powerful because it comes as an unforgettable surprise. And just such a surprise is Ando's gift to St. Louis.

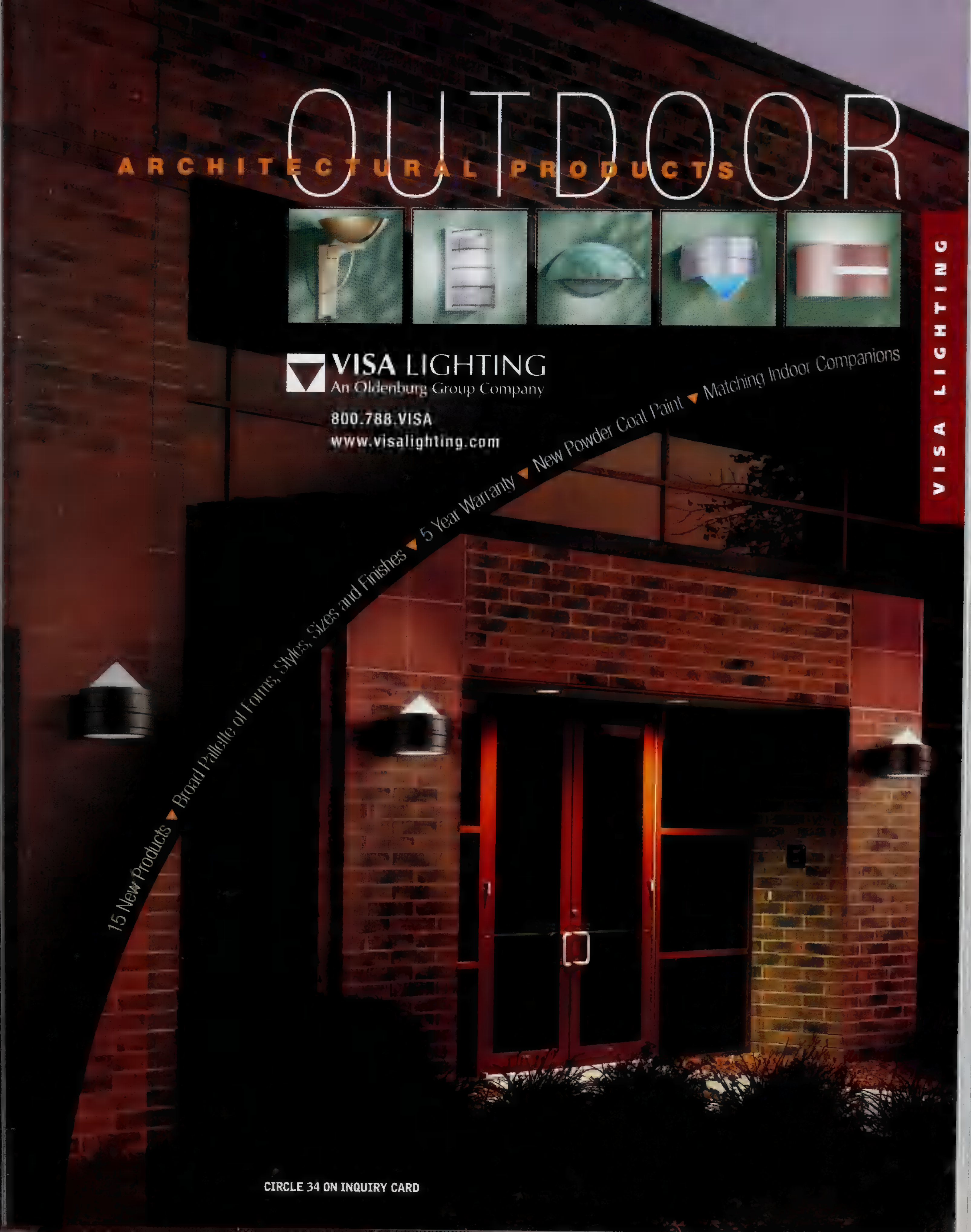
The foundation building consists of two narrow, parallel, rectangular boxes, equal in width but different in height. A reflecting pool (called the water court) runs between the two structures and shares the same width as each of them. The building is bordered by the street, the parking lot, an exterior court to be shared by the Forum of Contemporary Art next door, and an undeveloped site at the rear. On the main floor, the lower box contains an entrance gallery and executive office space that overlooks a roof garden and the lower court. Another gallery overlooks the water court, and the main gallery occupies the higher wing. The lower floor is primarily office and storage space, with two small galleries reached by a splendidly proportioned ceremonial stair descending from the main gallery.

For the opening, Emily Pulitzer chose works limited in number, but select in quality. Monet, Maillol, Picasso, Braque, and Giacometti are among the masters represented, and the show includes contemporary works by Warhol, Lichtenstein, Rothko, and others. The water court has a single inhabitant—*Torso*, a bronze created in 1957 by Jean Arp. On the far end wall of the main gallery, at the foot of the ceremonial stair, hangs *Blue Black*, a painting on a pair of joined honeycomb aluminum panels, which Ellsworth Kelly created specifically for the space. Outdoors, a series of stairs and ramps punctuated by terraces descends to the paved court, dominated by Richard Serra's weathering steel sculpture *Joe*. Named by the artist in honor of the late Joseph Pulitzer, Jr., the work is the first of Serra's torqued spiral series.

Staying true to old themes

Kelly and Serra, both of whom had visited Ando's work in Japan, influenced Pulitzer in her selection of the architect. Her goal was to have an architectural masterpiece built, and she has succeeded brilliantly. A bunker perhaps, but Ando is nevertheless at his best here. His client apparently did not invite him to explore new themes, or if she did, he didn't oblige. Instead, he has remained true to the lifetime disciplines of work—pure geometry, light, sky, and nature made abstract. Does his design relate to the context of Grand Center in St. Louis? Of course not, because there is no there there. The Pulitzer Foundation building is the first to provide context, and one may hope that the builders who follow pay attention. ■

The Church of the Light outside of Osaka is one of Ando's little churches from the 1980s.



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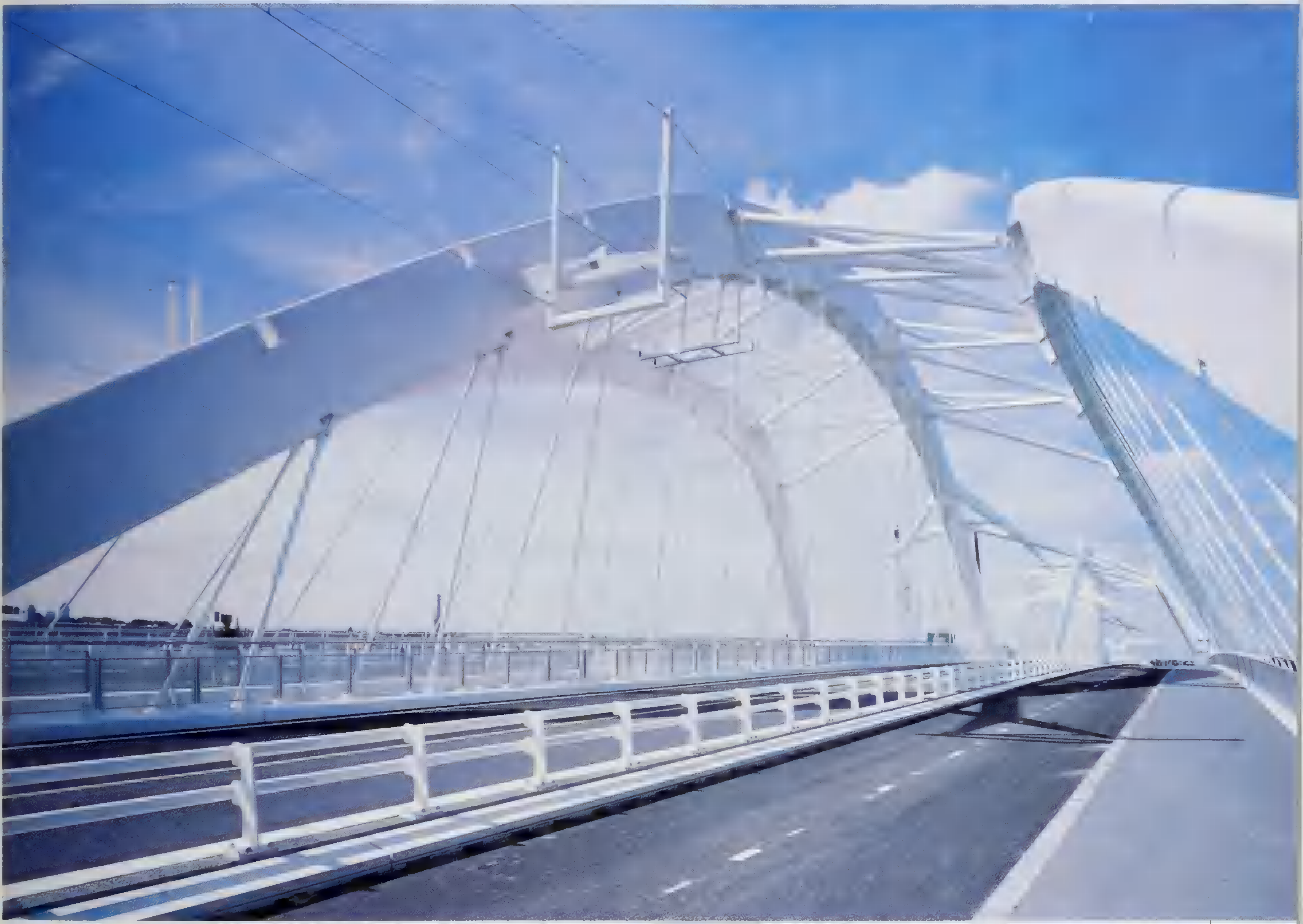
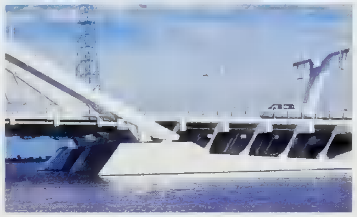
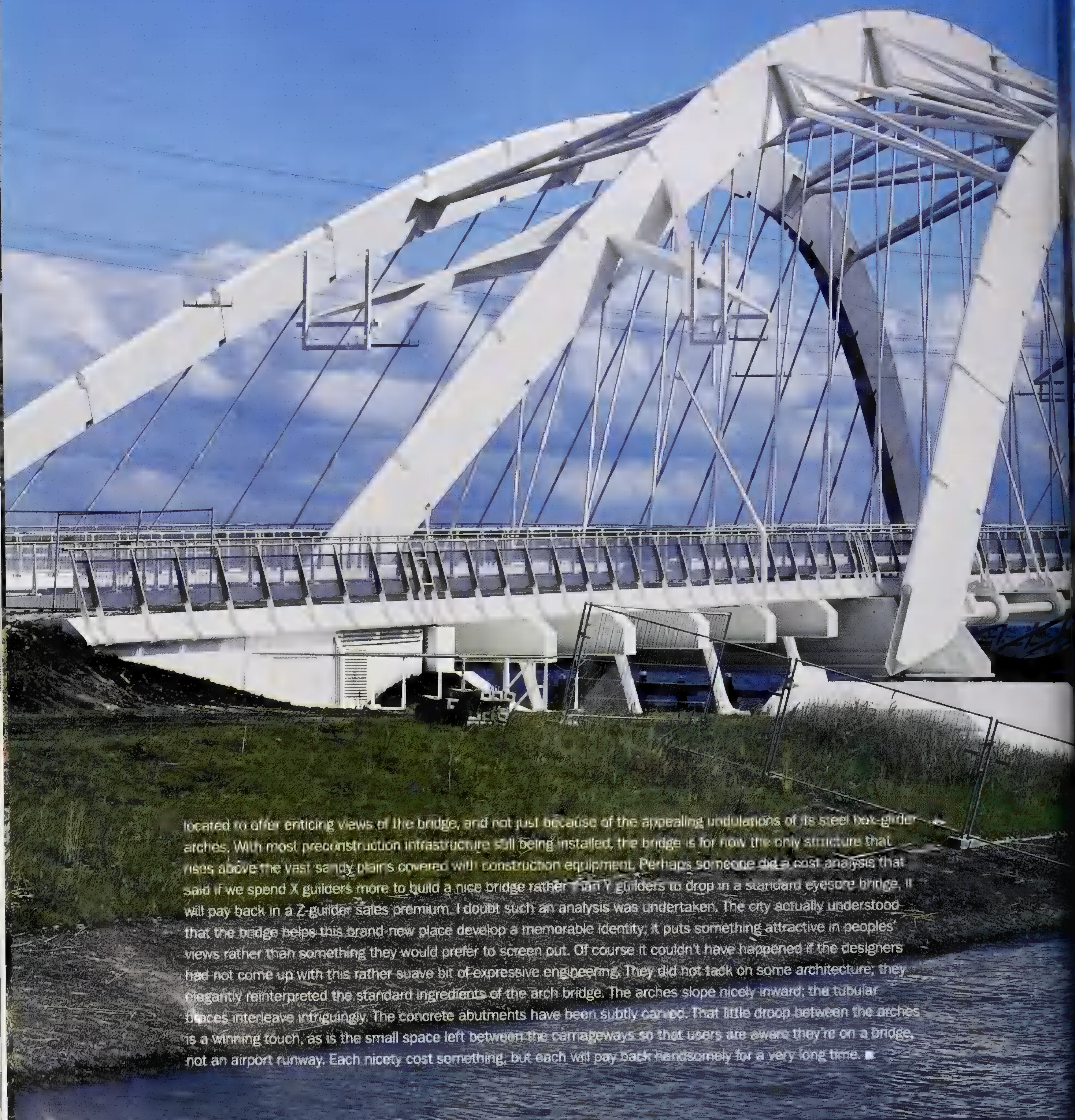


By James S. Russell, AIA

Lacy struts that promise a new city's greatness

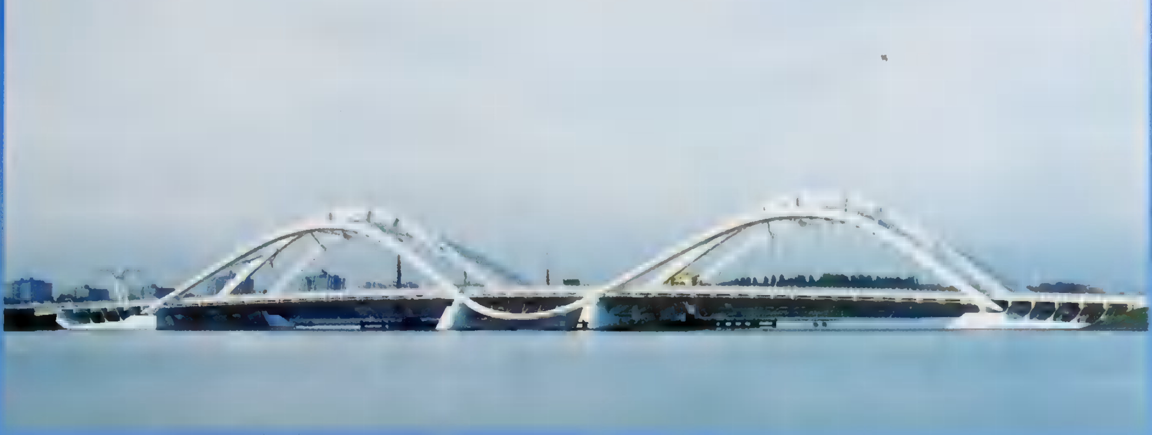
Only rarely do architects play any role in highway-bridge design in America, and the Ijburg Bridge, at the edge of Amsterdam, shows what we're missing. The city of Amsterdam could have done what most American cities would do—pull the standard girders and deck out of the civil-engineering bridge-building manual. After all, the 792-foot-span wouldn't tax engineering design or modern construction techniques. But Amsterdam saw the bridge as more than a vehicular conduit (indeed, the deck is divided into separate carriageways for autos, trams, bicycles, and pedestrians). Amsterdam asked architect Nicholas Grimshaw & Partners to design a symbolic gateway to the vast new urban development it is building on eight new man-made islands in the Ijmeer, the vast inland lake created by Dutch engineering from what was once an inlet to the sea. (The architect worked with WS Atkins and IBA, the engineering office of the City of Amsterdam.) Although tiny by this nation's historic reclamation standards, the new islands add up to 1,100 acres and may house as many as 45,000 people at buildout, perhaps 10 or 15 years from now. Sales offices have been

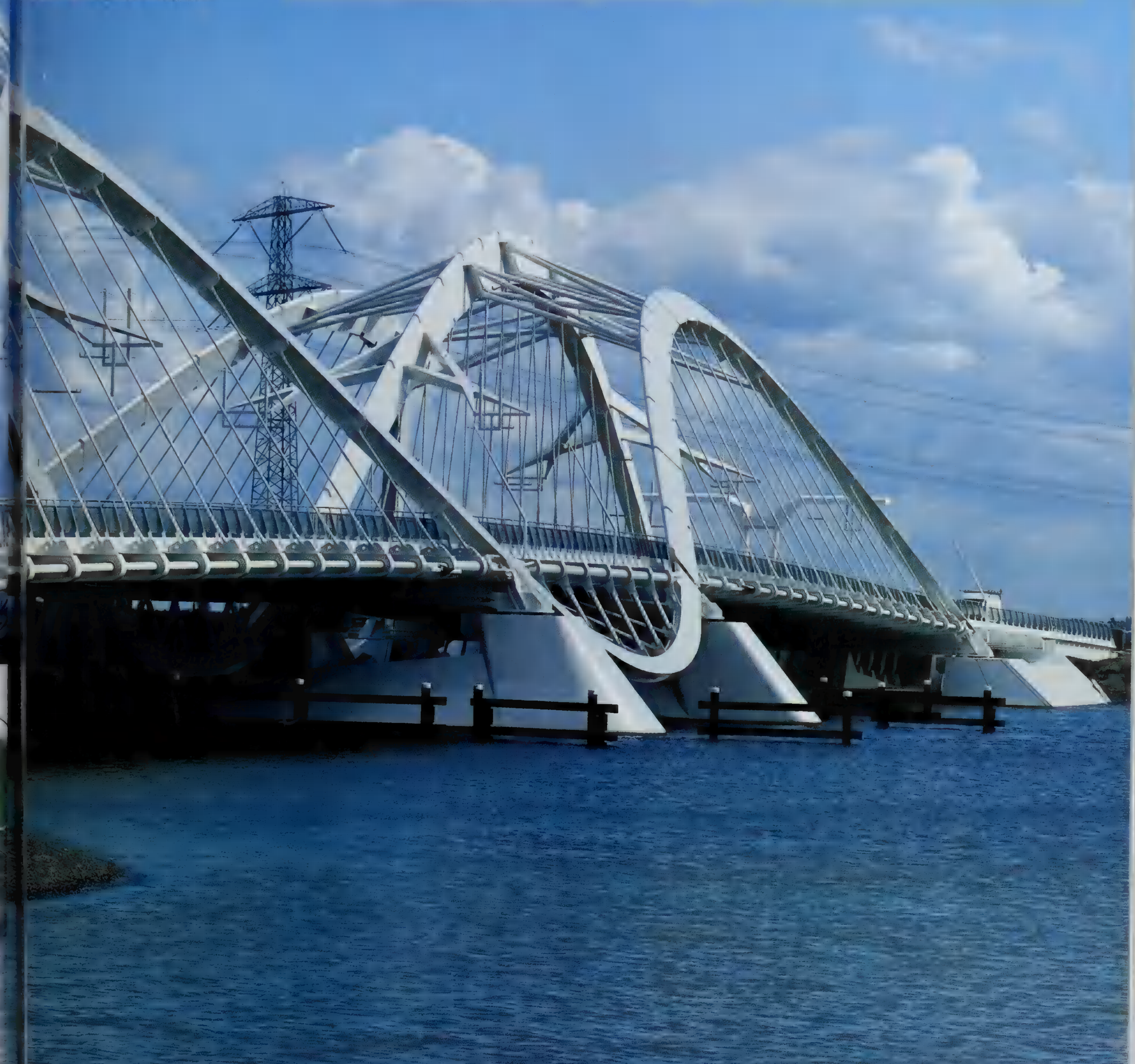


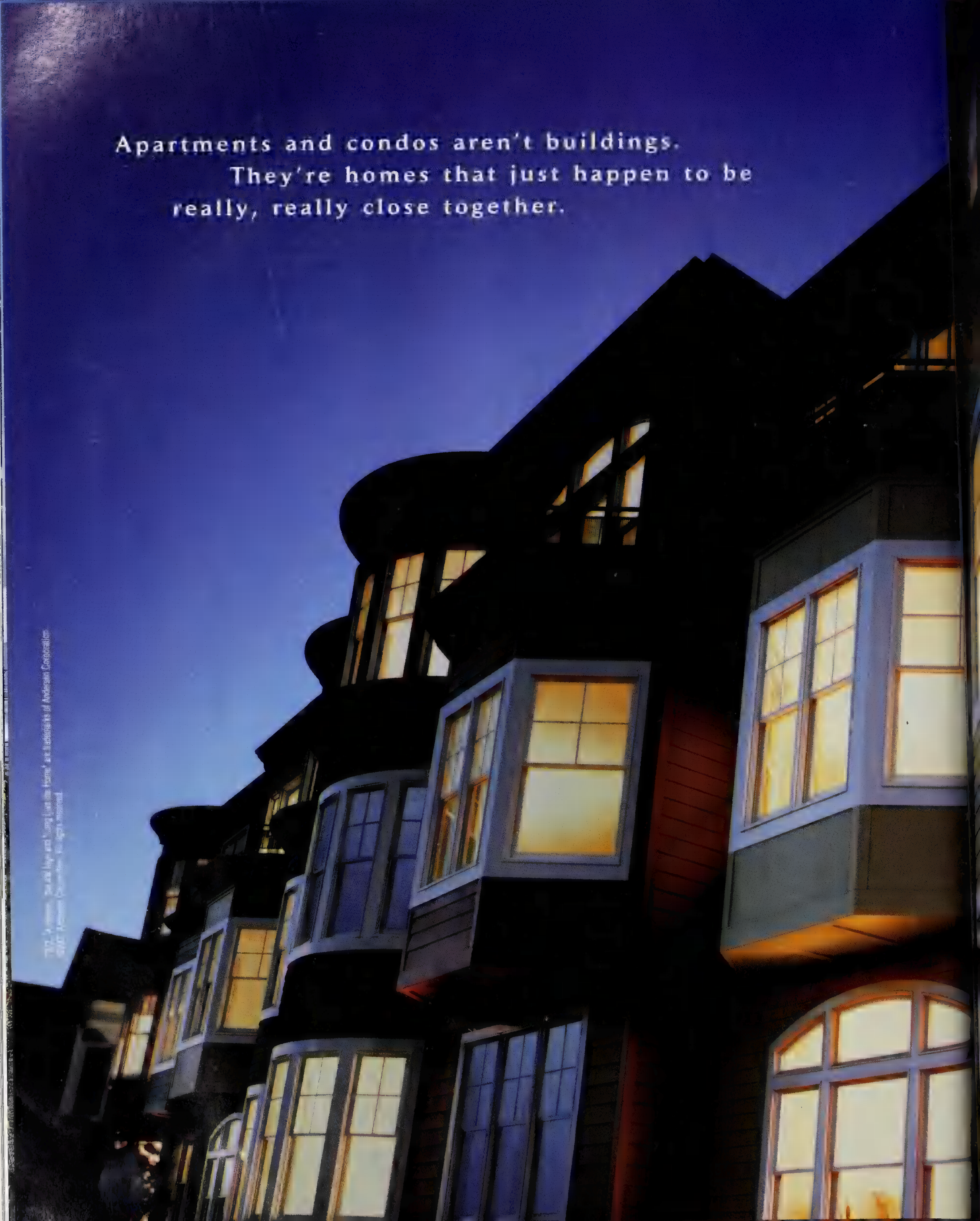


located to offer enticing views of the bridge, and not just because of the appealing undulations of its steel box-girder arches. With most preconstruction infrastructure still being installed, the bridge is for now the only structure that rises above the vast sandy plains covered with construction equipment. Perhaps someone did a cost analysis that said if we spend X guilders more to build a nice bridge rather than Y guilders to drop in a standard eyesore bridge, it will pay back in a Z-guilder sales premium. I doubt such an analysis was undertaken. The city actually understood that the bridge helps this brand-new place develop a memorable identity; it puts something attractive in peoples' views rather than something they would prefer to screen out. Of course it couldn't have happened if the designers had not come up with this rather suave bit of expressive engineering. They did not tack on some architecture; they elegantly reinterpreted the standard ingredients of the arch bridge. The arches slope nicely inward; the tubular braces interleave intriguingly. The concrete abutments have been subtly carved. That little droop between the arches is a winning touch, as is the small space left between the carriageways so that users are aware they're on a bridge, not an airport runway. Each nicety cost something, but each will pay back handsomely for a very long time. ■

The center arch rises in the gap between the carriageway decks, acting as a kind of backbone to the inward-tilted outer arches. Arches and deck segments were prefabricated and craned into place.



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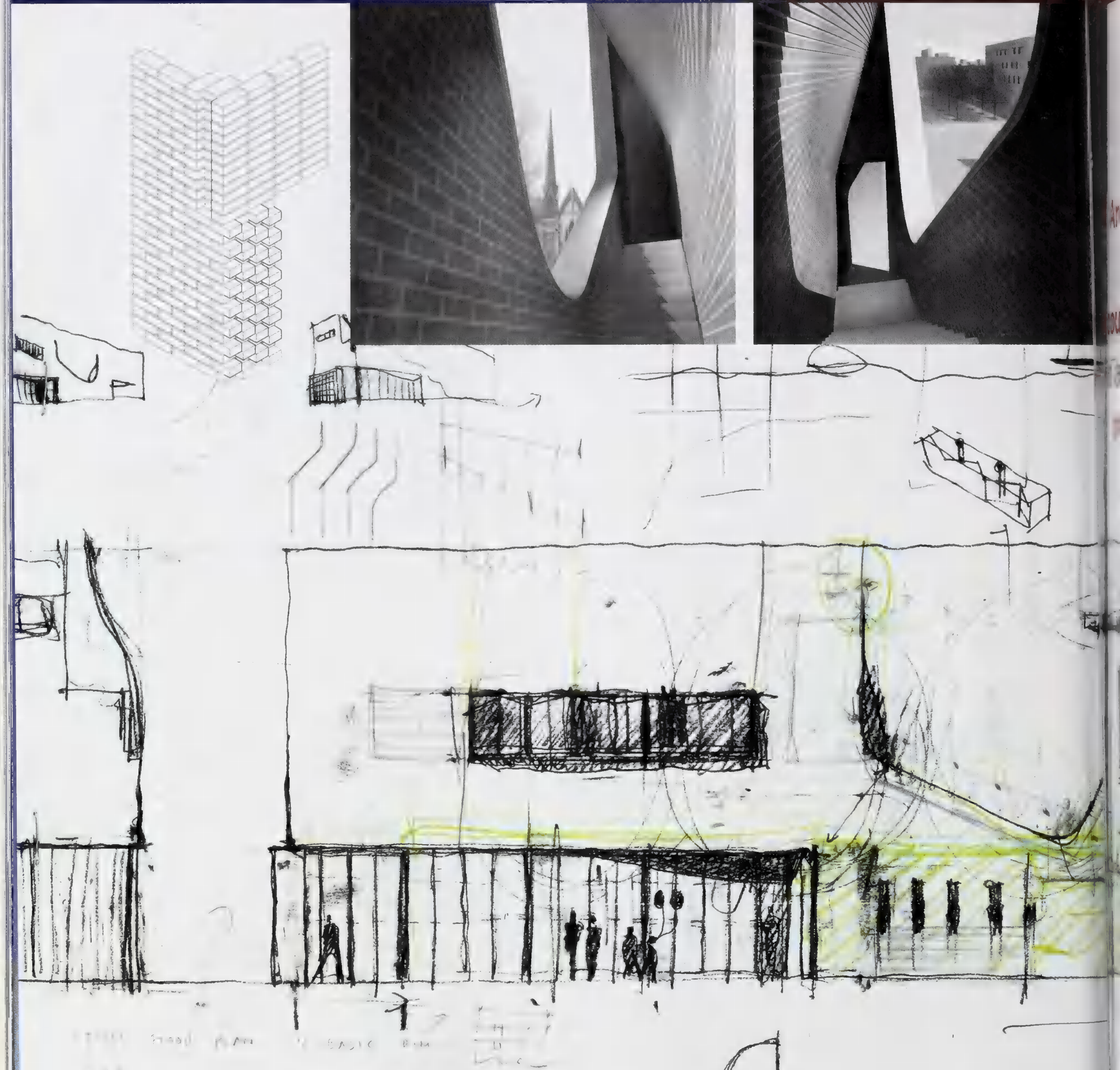
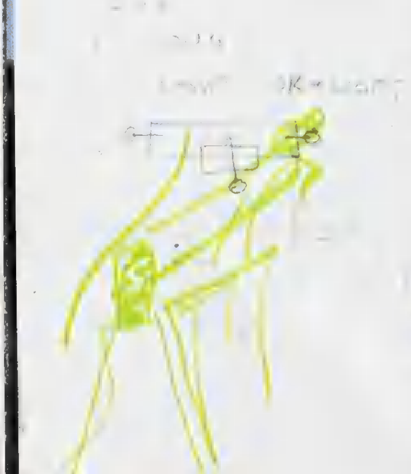
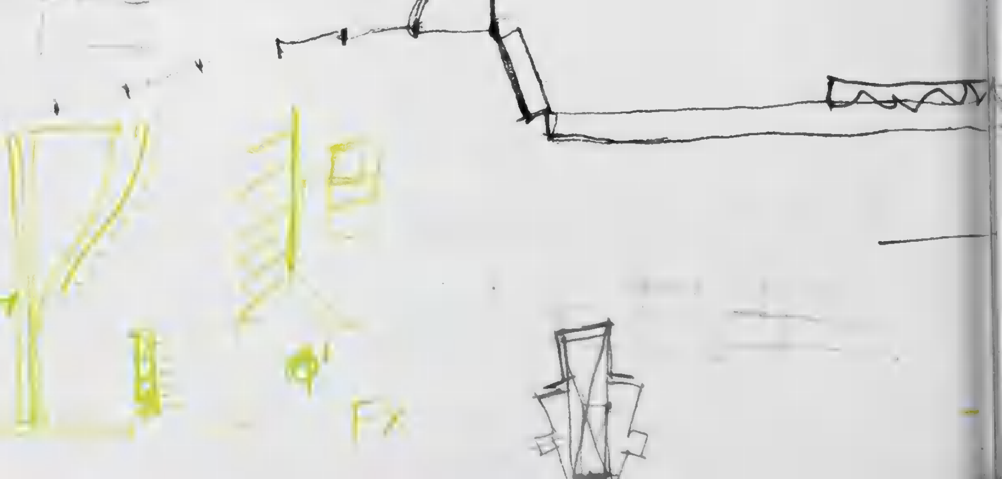




In Office dA's project for the Witte Art Center (above), a hybrid perspective (top) is created by the computer to show the intersection of three planes. The scratchlike section fragments and notations are done to examine the wrapping of the surface around the stair.



Drawing: The Creative Link

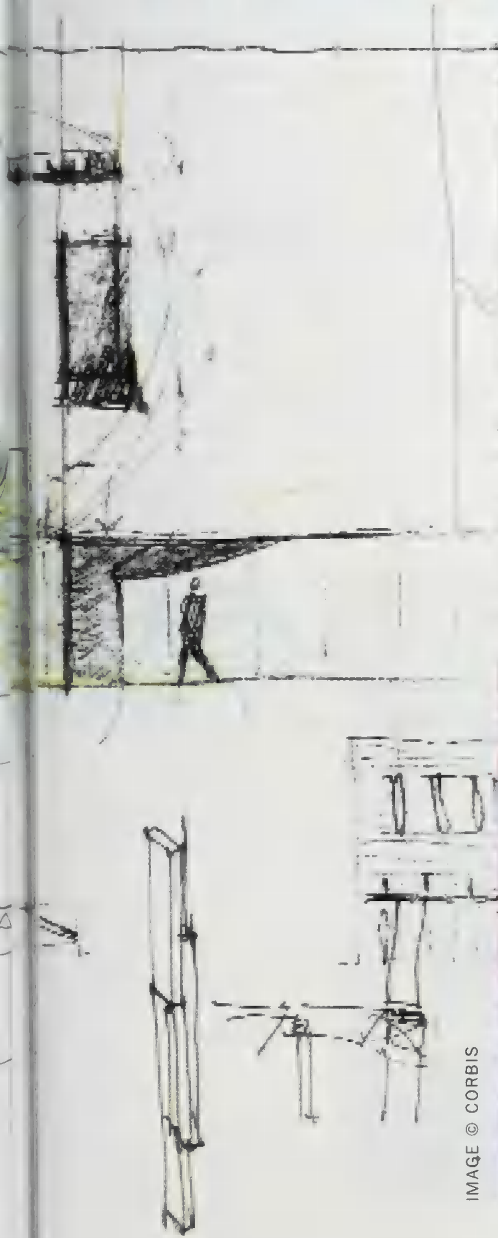
Architectural schools shouldn't jettison ourses in drawing, as analysis of the work of several innovative architects shows

By Sophia A. Gruzdys

Has the incorporation of digital technology into the creative process redefined the way architecture is taught? Five years ago the future of architectural education seemed clear. The "paperless studio" was the way to go. To be sure, schools continue to devote space exclusively to this course of study, but today students and professors are beginning to reassess the advantages of drawing and thinking by hand.

In the age of form•Z and Maya computer programs, the awareness that hand drawing helps architects to think and to create is being revived. The most innovative architects, those who do work through digital processes, still rely on hand-drawn representation. Because the computer does not discriminate the information it receives, there is an even greater need for hand drawings and diagrams to sort out ideas.

The computer is tempting: It bypasses the old techniques of drawing—two-dimensional orthographic projections of plan, section, and elevation—to allow the architect to work directly on three-dimensional models. By linking the architect's initial ideas as sketched in the computer to programs like Rhino and then to actual architectural form through CAD/CAM software, digital technology promotes speed, precision, and instantaneous results that are seductively economic and efficient. For this reason, the computer process has been called by Dana Cuff and others "the smart link" [RECORD, September 2001, p. 200].



Around 1300, Giotto developed a proto-perspective to render space in paintings such as *The Crib at Greccio* in San Francesco, Assisi.

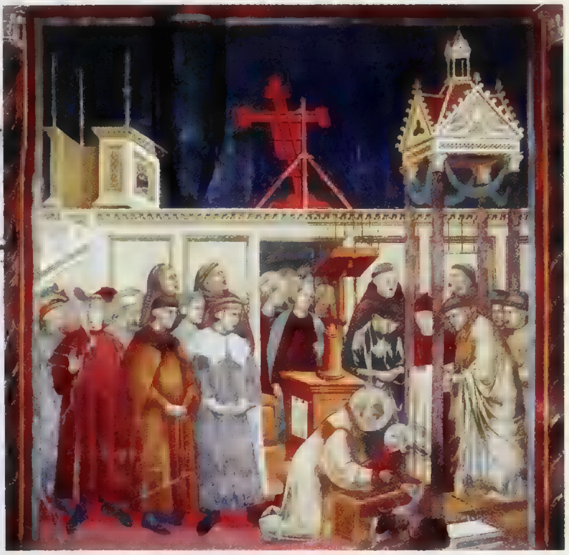


IMAGE © CORBIS

However, in practice, the act of drawing with pen and pencil has the obvious advantage of bringing the hand, eye, and brain of the architect together to promote, at the very least, a keener sense of proportion and scale. And, as the late Robin Evans pointed out, "For any material object to obtain freedom, its handler has to lose control of it." He is talking about creativity with a capital C. The process of searching, grappling, and pushing the boundaries of any medium is important to the creative process because it separates ideas caught in conventions from ideas that have been set free. One can lose control in both drawing and digital design, but with drawing, the subject becomes intimately familiar as an unmediated extension of oneself. Drawing is not just representation; it helps the architect to think ideas through, allowing their independence from the tools that mold them.

Drawing is essential in the teaching of architectural design because it brings the student into the entire design process from the beginning, not just at the end stage. The computer's speed allows students to explore alternatives quickly, but drawing encourages students to develop patience in

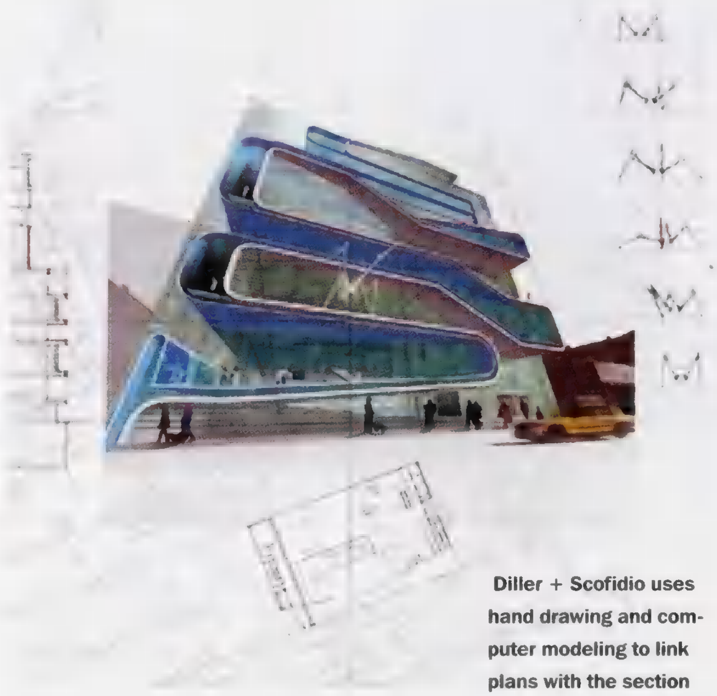
Sophia Gruzdys is an architect who practices in New York and teaches drawing and design at Yale University.

creative work. At Columbia University's Graduate School of Architecture Planning and Preservation, students are taught drawing in order to understand and follow more closely the functions of the computer. At Yale's Scho of Architecture, analytical freehand drawing is taught to explicate and analyze architectural form; while at Harvard's Design School, both perceptua freehand drawing and rigorous, hard lined, hard-core descriptive geometr are equally important.

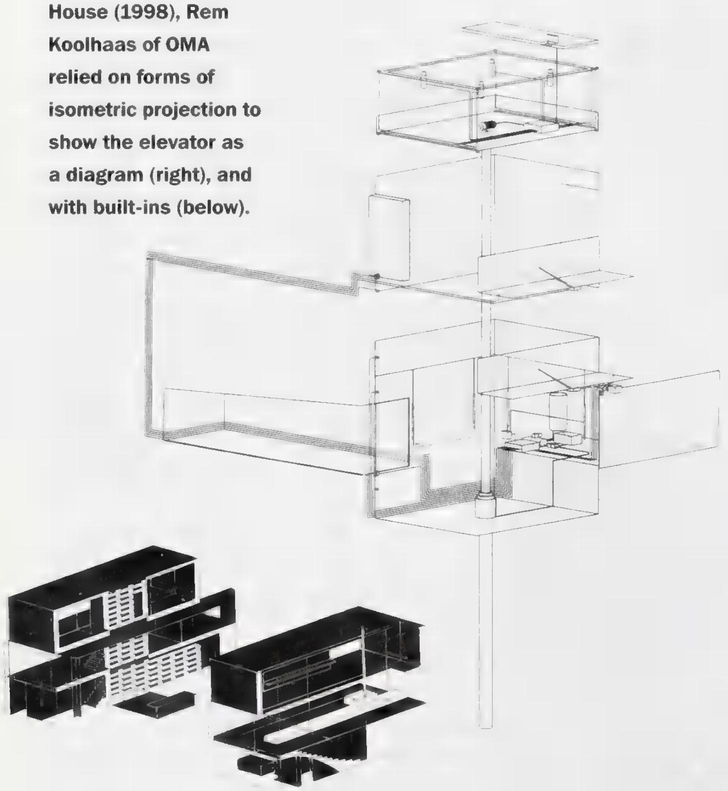
A number of inventive architects today rely on drawing by hand even when they are known for their use of sophisticated computer technology. Frank Gehry moves from the sketch at the beginning of the process t the CATIA software at the end. Gehry is not alone. Other architects emplo all sorts of drawing types, including perspective, orthographic, and paralle drawing projections, to promote a further understanding of their worl through the tools of geometry.

For Office dA in Boston, the perspective serves as a tool of perception while performing a syntactic function to position three planes—plan, section and elevation—in relation to one another. In its Witte Arts Center project i Greenbay, Wisconsin, principals Monica Ponce de Leon and Nader Tehran designed a promenade that threads in and out of three facades, one of whic contains a stair that slips through the building. Here the brick facade literall wraps the stair in this scheme where the material is being pushed to its geometric limits. This interest in material is also seen in Mies van der Rohe's famous drawings of the Brick Country House (1923), where the turning of the corne and the jointing of the brick are investigated, using perspective as an analytica tool. CAD/CAM has added an entirely new dimension to fabrication technology but the fascination with geometry and its underlying armature precedes the exploration in the computer. There is not a single, unique logic to the development in Office dA's work. All these tools serve to "thicken the plot," says Tehrani.

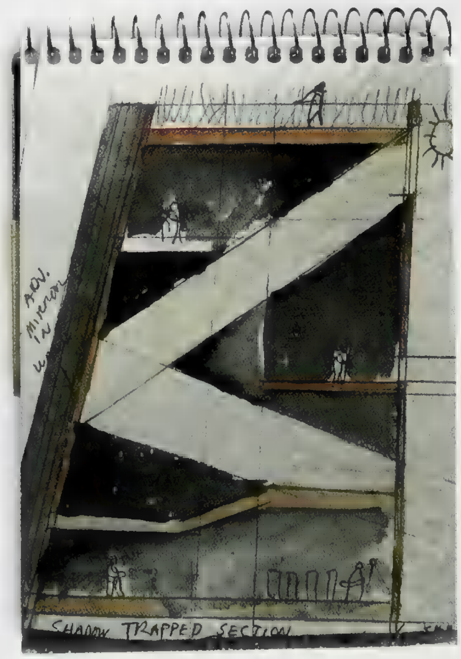
Quite different from Office dA's drawings are those of Steven Holl. More than most highly published architects today, Holl seems to rely on drawing by hand to create and represent his ideas. One can surmise that he really isn't interested in the computer to promote the sensory characteristics of his work. Like Le Corbusier, Holl develops the kinesthetic aspect of the architectural promenade in his design, using drawing to work out the diagram and sketch the experiential quality of moving through a building. In this regard, Holl's success with built work may be traced to his devotion to drawing as the embodiment of an authentic thought, analogous to our interest in



Diller + Scofidio uses hand drawing and computer modeling to link plans with the section in its competition design for the Eyebeam Atelier, in New York City.

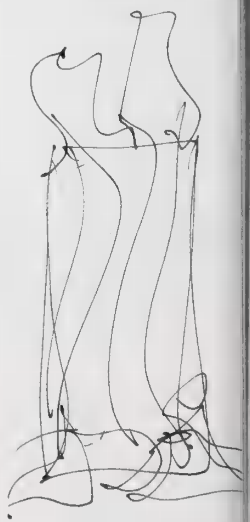


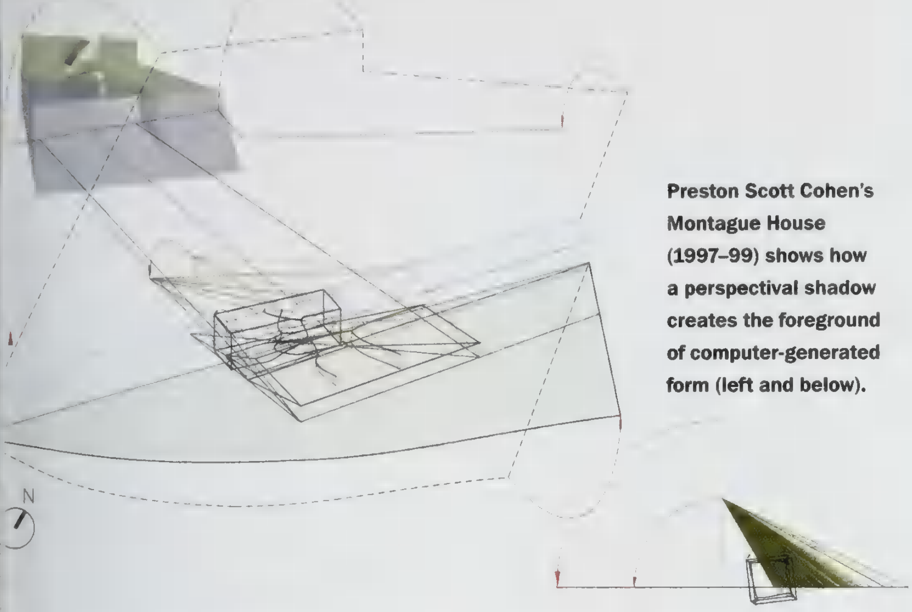
For the Bordeaux House (1998), Rem Koolhaas of OMA relied on forms of isometric projection to show the elevator as a diagram (right), and with built-ins (below).



Steven Holl sticks to drawing and watercolor to develop a diagrammatic section for the Knut Hamsun Museum in Norway (right).

Frank Gehry's sketch (below) for the New York Times tower competition (2000) shows a freedom in uncertainty.





Preston Scott Cohen's Montague House (1997–99) shows how a perspectival shadow creates the foreground of computer-generated form (left and below).

things artisanal, like handmade paper and crafted food. In the Knut Hamsun Museum in Hamarøy, Norway, Holl's section is drawn so that the idea of episodic, nonlinear time evident in Hamsun's novel is expressed in architecture as a play of light.

The architectural firm of Diller + Scofidio enlists projective drawing techniques to clarify its own ideas about form and experience. As Liz Diller explains, the projects become a back-and-forth between hand drawing, computer modeling, and the construction of physical models. The drawing strategy of linking a plan, for example, to a section, which might have been extracted from a perspective, helps sort out the architectural decisions of the building. Here the computer is not a generative device, but a tool to create a simulacrum of the real and extend an idea that has been "thought through" by hand. As seen in their competition design for the Eyebeam Atelier, a gallery in New York City, the drawing strategy specifies details and decisions along the promenade.

For his part, Rem Koolhaas has kept the isometric alive. Different from an axonometric projection, the isometric construction expresses a point of view in relation to the subject. Peter Eisenman used it in the late 1960s as an extension of his interest in formal and compositional ambiguities. Koolhaas's sometric for the elevator of his Bordeaux House (1998) demonstrates the economy of means by which he uses drawings to express his ideas. Because the elevator was designed so that the handicapped owner could reach all parts of he house, it is fitting that the isometric, whose point of view is not neutral, represents this most significant aspect of the architectural concept.

Clearly, both drawings by hand and mouse must be taught in our architecture schools, not as antithetical representations, but as integrated elements of a creative process. For example, Preston Scott Cohen's drawn knowledge of seventeenth- and eighteenth-century parallel and perspective proective techniques enables him to break new ground in inventing form with the computer. In the Montague House (1997–99), the terminal line, derived from he specifics of the site, shapes the primary body of the house, while the perpective projection onto the site creates the protective garden foreground. Here, his decision to search just beyond the limits of this drawing system helped him ose control in order to find form. This process requires patience, a patience that llows one to take the time to "craft" an architectural solution. Ultimately, our minds synthesize the respective value of both drawn and digital thought to determine how architecture is to be imagined, conceived, and made. ■

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Going Out On a Line:
A brief Q&A about historic moments in drawing

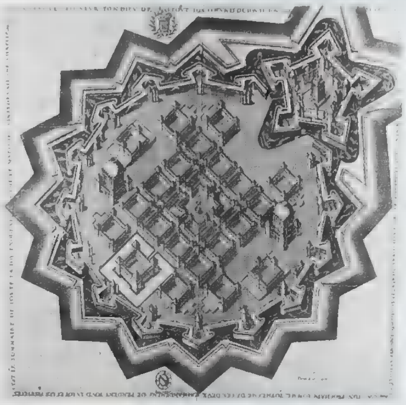
1. Who used perspective first? In the first century B.C., Vitruvius, in Book I, described perspective as a "shaded image of the front and the retreating sides, and the correspondence of all lines to the center of a circle." Around 1300, Giotto used what you might call proto-perspective in the projection of spaces to give a sense of the third dimension in paintings like *The Crib at Greccio*, in San Francesco, Assisi. Alberti, in his *Della Pittura* of 1435, spelled out the mechanics of perspective as demonstrated by Brunelleschi's optical experiments with the Baptistry in Florence of 1420.

2. Who was the first architect to use the plan, section, and elevation? Plans, sections, and elevations (orthographic projections) were first employed by Raphael in the design of Villa Madama (1517–21) in Rome, for Pope Clement VII. The full potential of orthographic projection was realized by Gaspard Monge, a French military engineer, who, in his *Géométrie Descriptive* of 1799, positioned parallel projections of the object on planes perpendicular to one another.

3. When were axonometric drawings developed? Proto-axonometric drawings appeared in depictions of military fortifications, as in Jacques Perret's 1601 treatise *Des Fortifications*. Then, in 1873, axonometric (parallel) projection was developed by the French engineer Auguste Choisy. Although axonometric drawing had its origins in perspective, the increased distance between the viewer and the object renders the form more universal and abstract The technique was seized upon by avant-garde types such as El Lissitsky, Theo van Doesburg, and Le Corbusier.

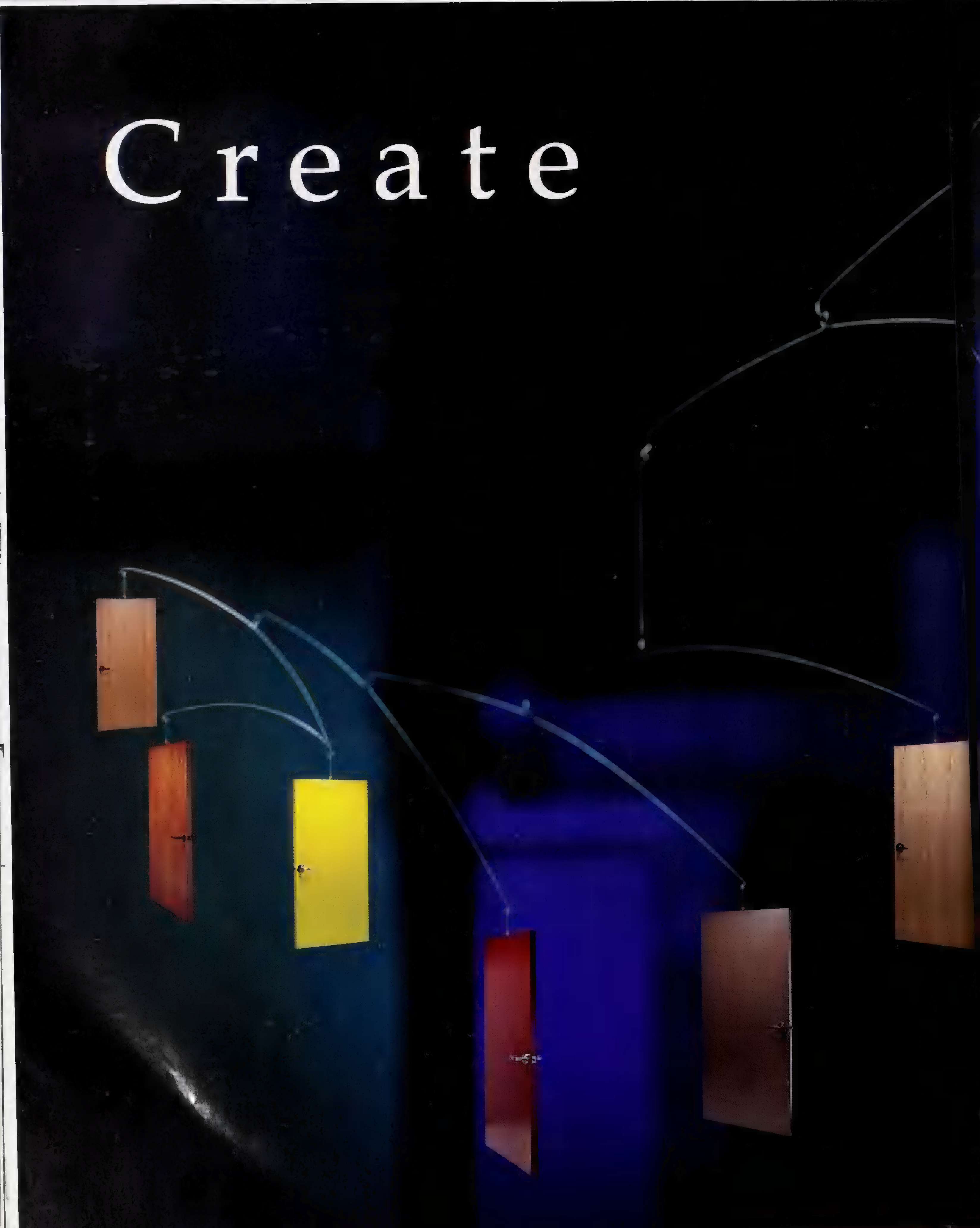
4. What about isometric drawings? In 1820, the isometric form of parallel projection was systematized by a British engineer and mathematician, Sir William Farish, in an attempt to make the complex drawings of industrial machinery more readable. This type of drawing, in which the three faces are positioned at obtuse and acute angles to one another, allow a spatial reading of the structure, where planes and their edge lengths can be measured precisely. In the 1930s, the isometric became quite popular when Boeing used it to explain orthographic projects to untrained workers. S.G

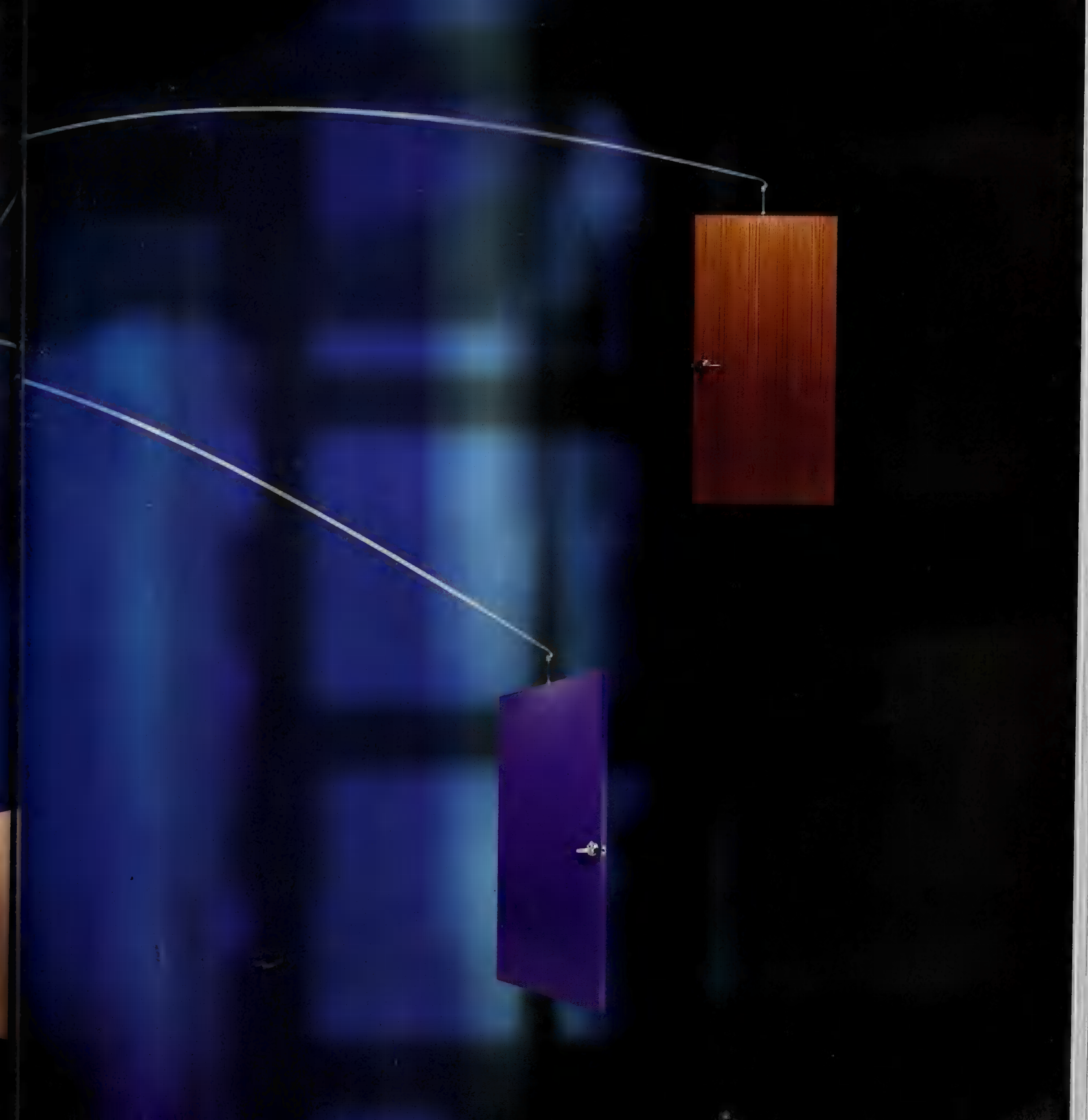
Jacques Perret's *Des Fortifications* (1601).



For more history, see Alberto Perez-Gomez and Louise Pelletier's Architectural Representation and the Perspective Hinge *(1997) and Martin Kemp's* The Science of Art *(1992).*

Create





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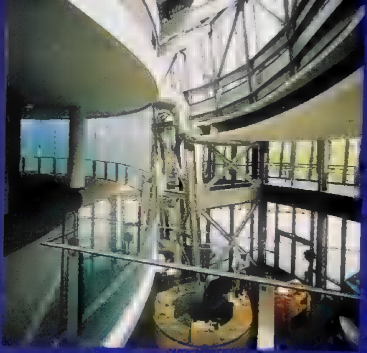

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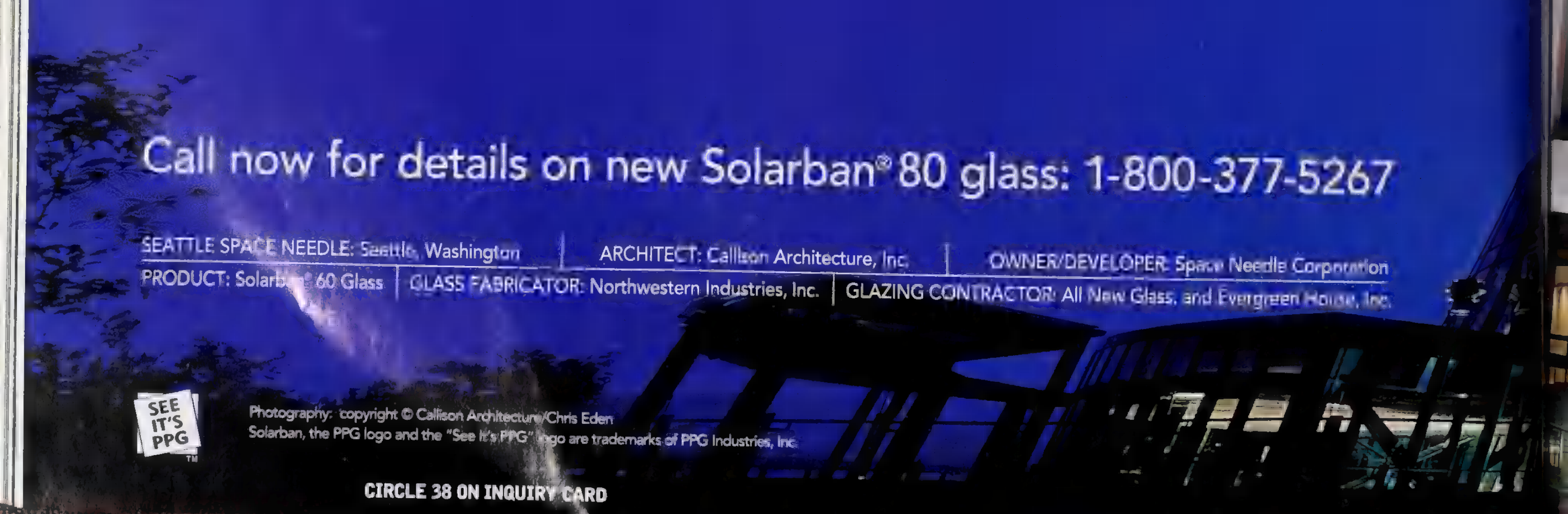

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Design Intelligence and the New Economy

It may look as if the landscape changed after 9/11, but features of the new economy are alive and shaping architectural practice

By Michael Speaks

The past year brought numerous and seemingly definitive condemnations of the new economy and the heady future it promised to all who understood it and lived by its rules. Then came September 11, dealing what remained of the optimism about the new economy a decisive blow from which it may never recover.

Yet its fundamental features, as enumerated by Kevin Kelly in his influential *New Rules for the New Economy* (1998), were not altered by the catastrophic events of September. According to Kelly, "This new economy has three distinguishing characteristics: It is global. It favors intangible things—ideas, information, and relationships. And it is intensely interlinked. These three attributes produce a new type of marketplace and society, one that is rooted in ubiquitous electronic networks."

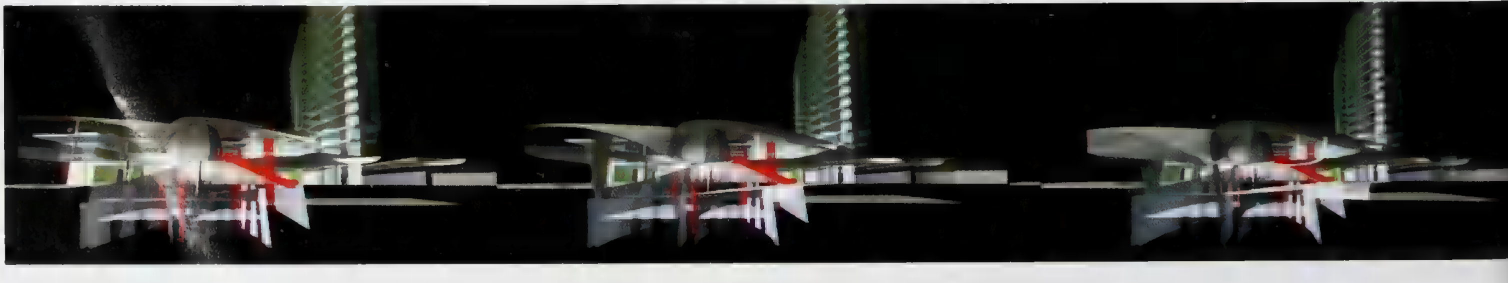
The relevance of all this for architecture may not be obvious, but it should be. During the 1990s, architecture underwent fundamental changes, many of which followed the contours of the new economy and the technological, political, and organizational transformations it prompted. One of the most significant changes was the rise of what Amsterdam-based architects Ben van Berkel and Caroline Bos call the "network studio." On the occasion of the reorganization of their own office under the moniker UN Studio (United Network Studio), Van Berkel and Bos published *MOVE* (1999), a three-volume monograph in which they announced the emergence of a new kind of virtual architecture studio, which, they wrote, "extends existing forms of cooperation with clients, investors, users, and technical consultants to include design engineers, finance people, management gurus, process specialists, designers, and stylists." The successful completion of unimaginably complex projects such as their Erasmus Bridge in Rotterdam, detailed in *MOVE*, is a testament to the efficacy of a new kind of network practice.

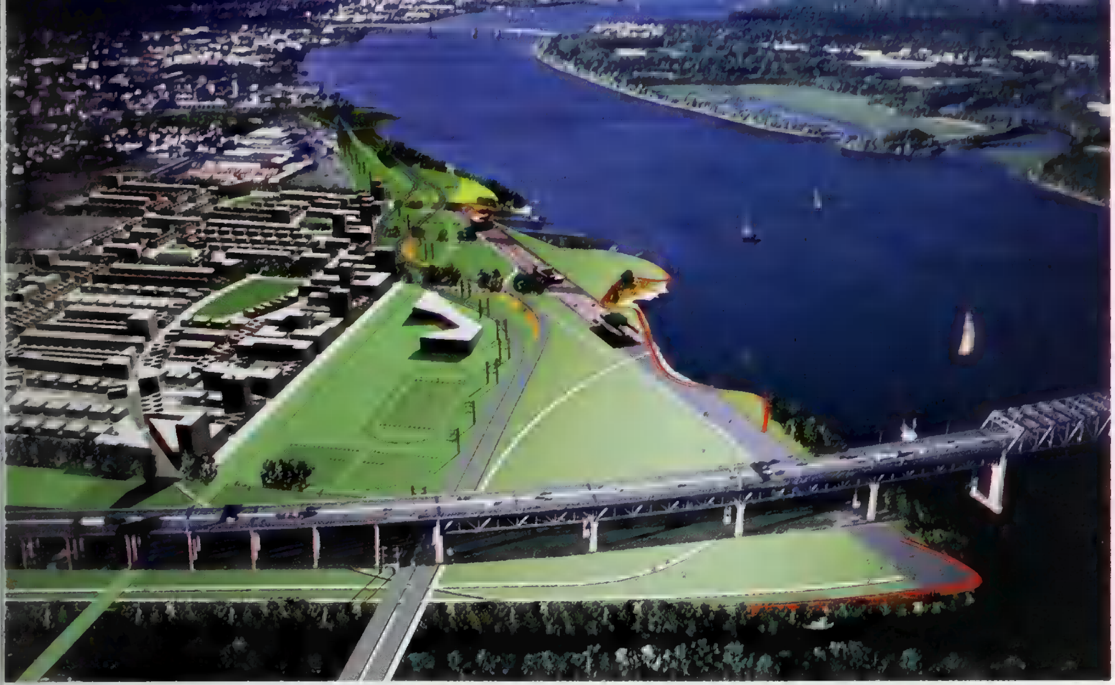
Enabled by new information and communication technologies, network practices become communities that are more powerful than any single studio or office. Networks, Kelly suggests in *New Rules*, allow for a gathering and redistribution of information so that "as the number of nodes in a network increases arithmetically, the value of the network increases exponentially." And when network links to network, the possibilities for innovation multiply exponentially, as well.

The new architectural practice

Not limited to established firms like UN Studio, network practices proliferated in the 1990s, reflecting the need for small, innovative studios to

Michael Speaks, a RECORD *contributing editor, wrote "How the new Economy is Transforming Theory and Practice" in December, 2000. He is the director of the Metropolitan Research and Design Postgraduate Degree program at the Southern California Institute of Architecture in Los Angeles and has a Ph.D. in literature from Duke University.*



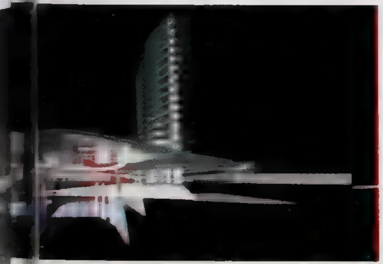


The North Delaware Riverfront Study by Field Operations—Stan Allen/James Corner of Philadelphia and New York—for the Bridesburg section of Philadelphia (2001).

create working partnerships that bridged geographical divides. The Korean Presbyterian Church of New York [RECORD, November 2000, page 78] was designed and built as a collaboration among Greg Lynn (Los Angeles), Douglas Garafalo (Chicago), and Michael McInturf (Cincinnati), architects with small offices in three geographically distant cities. Taking advantage of electronic imaging and new communication technologies, they were able to complete a large, complex project in a distant city, which none could have managed alone. The rise of network practices such as O.C.E.A.N., founded in London, with members scattered around the world, and the New York and Philadelphia–based Field Operations, a collaboration between architect/theorist Stan Allen and landscape architect James Corner, also reflected the need to expand research and development possibilities that have been luxuries to most firms.

Research was essential for many of these new offices. Dutch firms like MVRDV transformed "datascaping"—the literal transformation of data (economic, building codes, etc.)—into a new kind of design protocol. Meanwhile, Crimson and MAX.1, also from Holland, developed new urban-planning strategies based on what they called "orgware," a middle ground between the software of plans and the hardware of architecture. Research also became the focus of many new programs in schools of architecture, including at Harvard Graduate School of Design's "Project for the City," the Berlage Institute in Rotterdam, the Design Research Laboratory (DRL) at the Architectural Association in London, and the Metropolitan Research and Design Program at SCI-Arc in Los Angeles.

This interest in research in architectural schools was accompanied in many cases by a parallel development in which the object of the research was no longer simply an academic thesis required for a degree, but t aimed instead on discovering opportunities for architects to exploit, both commercially and socially. DRL head Patrick Shumacher boldly states, "Questions concerning design product and process can only be addressed within an academic framework that understands architecture as a research-based business rather than a medium of artistic expression."



A proposal by Ben van Berkel and Caroline Bos of UN Studio in Amsterdam for a transit station in Arnhem, the Netherlands, (1996).

Following Kelly's assertion that the new economy favors intangible things, knowledge-based architecture consultancies like AMO, an offshoot of Rem Koolhaas's Office for Metropolitan Architecture (OMA), also emerged in the 1990s [RECORD July 2000, page 92]. AMO was formed when principals Rem Koolhaas and Dan Wood, then project architect for OMA's abandoned Universal Studios Project in Los Angeles, discovered that their ideas and research into the identity, organizational structure, and corporate culture of Universal was potentially more valuable than any "investment in the physical." As AMO principal Jeffrey Inaba explained recently, relying on an extensive and loosely organized network of curators, philosophers, editors, and designers, AMO offers clients such as Prada, Condé Nast, and Harvard University "cultural intelligence with a decided point of view."

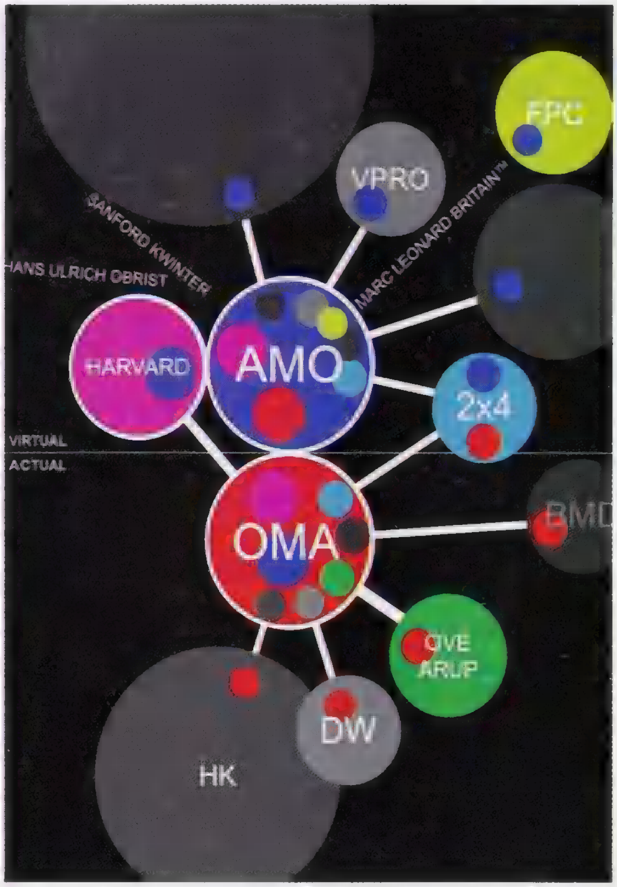
Appeal for the Big Guys

The formation of Gensler Consulting in the late 1990s signaled that some large firms understood better than anyone the growing importance of "intangible things." Created by the merger of Gensler's strategic-planning and information-service practices, Gensler Consulting sought to develop new business competencies. As Gensler COO David Gensler noted in a recent conversation, "It is built upon the customer-oriented approach that was part of the original vision of the firm's founders." Seeking the next level of innovation in an already successful "business to design" approach, Gensler Consulting was able to transform knowledge gained from what it calls "client intimacy" into new lines of nontraditional design services. "To stay abreast of changing conditions," says Loree Goffigon, Gensler's firmwide head of consulting, "we must understand all aspects of a client's business needs, including not only its spatial and environmental needs, but also its technology, communications, organizational, and cultural needs." These new, knowledge-based services include workplace transformation, information solutions, and real estate facilities strategy, among others.

Young firms join in

An interest in this kind of integrated approach led Gregg Pasquarelli and his partners at SHoP, a young and growing firm founded in the mid-

AMO, the research arm of Rem Koolhaas's OMA based in Rotterdam and New York, relies on a network of curators, philosophers, editors, and designers to provide clients "cultural intelligence with a decided point of view" (below). At right, an image from a recent long-range planning study for Harvard University.



1990s in New York City, to think very carefully about the kind of practice they wanted to develop. "We looked around and none of the existing models of practice were of interest to us. Design had pushed itself into a thinner and thinner, horizontal part of the industry, and we were looking for a more vertical integration of the process, in which design was not just handed-off but was part of an entire approach." Projects such as their Museum of Sex in Manhattan and Dunescape at PS1 in Queens showcase SHoP's ability to turn out high design. But, according to Pasquarelli, who worked in the financial-services industry before becoming an architect, SHoP is interested in more than the formal or aesthetic dimension of the project. Indeed, as Pasquarelli is fond of saying, SHoP is more like McKinsey & Company than it is like other architecture offices. But, unlike management consulting firms or architecture firms, SHoP has combined the two most advanced forms of design intelligence—computer design technology and a sophisticated approach to marketing, public relations, and other aspects of the business of architecture—to create a truly innovative practice that enables it to tackle big projects. "Large developers now come to us for total end-to-end design services," Pasquarelli observes, "from finding the property to determining the nature and scope of the project to marketing, financing, manufacturing, and project delivery."

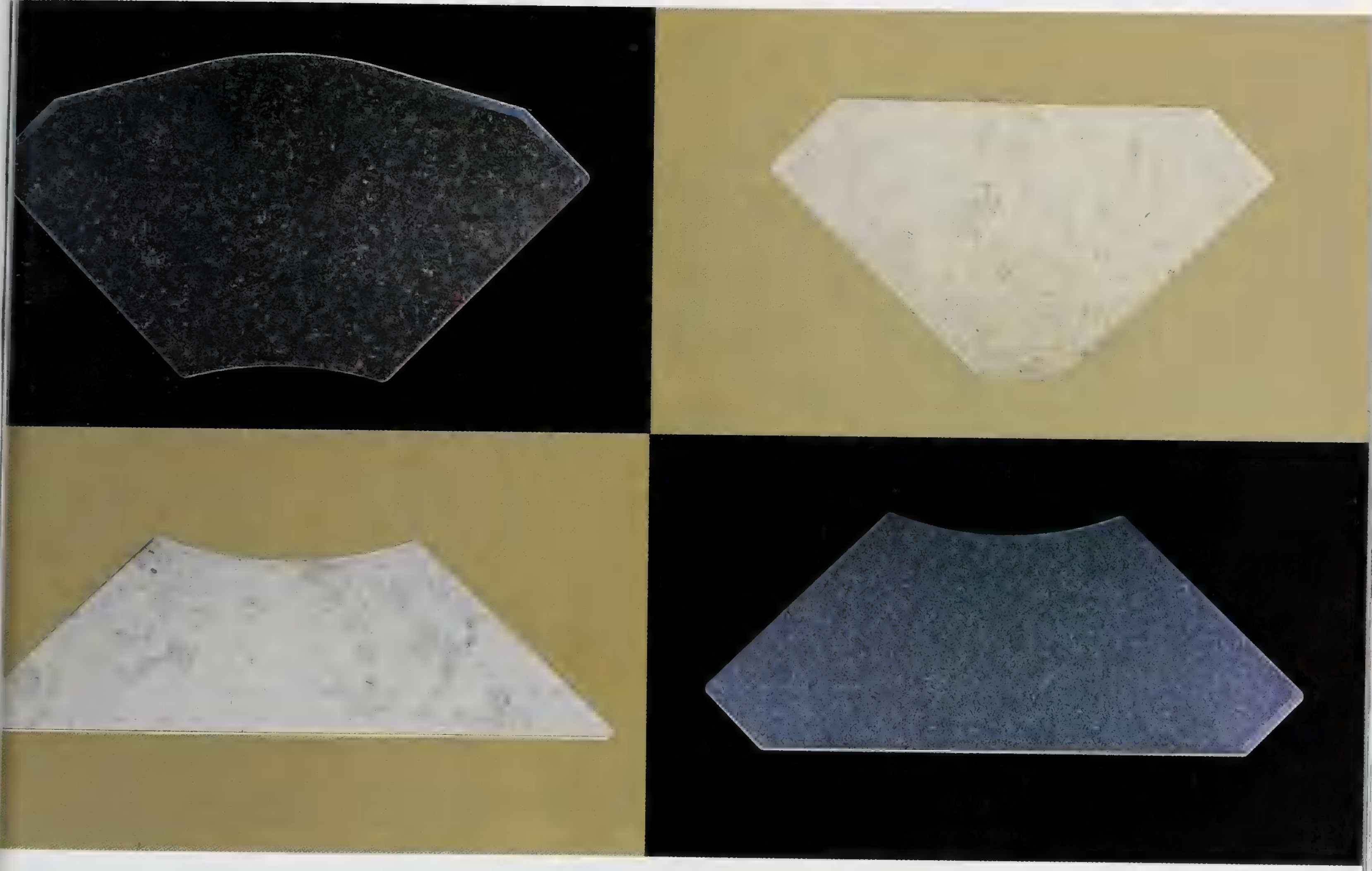
Even the most forward-looking members of the architectural establishment have ignored the above-mentioned innovations in architectural practice and product. Often the importance of the new economy and the changes it has brought about are unrecognizable to architects, critics, curators, and editors trained to see change only in stylistic terms, and who, moreover, have an almost pathological aversion to the market and business culture in general. One year ago, it seemed as though change was in the air. Following a history of trendsetting exhibitions at the Museum of Modern Art, *Things in the Making: Contemporary Architecture and the Pragmatist Imagination*, a conference organized by Terence Riley, MoMA's chief curator of architecture and design, and Joan Ockman, director of Columbia University's Buell Center, promised to chart a new course by focusing on architectural practice rather than on new styles.

The promise, however, went unfulfilled. Instead of discussing real innovations in practice, the conference was more concerned with filling the vacuum created by the exhaustion of Continental "theory," which had provided the intellectual foundation for avant-garde architecture since the 1970s. And for this it turned to Pragmatism, that uniquely American philosophical disposition associated with William James, C.S. Pierce, and John Dewey. In a recent essay on the conference in *A + U*, Ockman observed that many vanguard architects whose reputations were built on ideas are now dealing with "real-world building" and the vicissitudes of the global marketplace. It is in this context, she proposes, "that a theory of practice—specifically a theory of these incipient forms of practice still very much in the making—seems particularly necessary."

THE INNOVATIONS IN ARCHITECTURAL PRACTICE HAVE BEEN IGNORED EVEN BY THEORISTS ADDRESSING PRAGMATISM.

Pragmatism might be an appropriate choice for a conference

Evolution



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addressing what theory would come after the exhaustion of "theory." But focusing on a theory of practice rather than on newly emerging forms of practice suggests a failure to recognize the important shift in the relationship between thinking and doing that occurred in architecture in the 1990s. Rather than turn Pragmatism into a theory meant to influence practice, the goal should have been to emphasize thinking as doing—the promise extended by Pragmatism in the early 20th century and readdressed by managerial thinkers in the 1990s. Management pioneer Peter Drucker has pointed out that the transformation of modern capitalism into a world system was enabled by a fundamental change whereby knowledge was no longer centrally concerned with *being* (philosophical questions about what is), but with *doing*. Knowledge was applied to tools in the first, industrial period of capitalism, the period in which American Pragmatism emerged. But, Drucker suggests, a second phase of this transformation occurred after World War II in which knowledge is applied not only to tools but also to intangible things—ideas, information, and relationships. This transformation ushered in the management revolution and signaled the emergence of "the knowledge society," as Drucker terms it, of which the new economy is only the most recent incarnation.

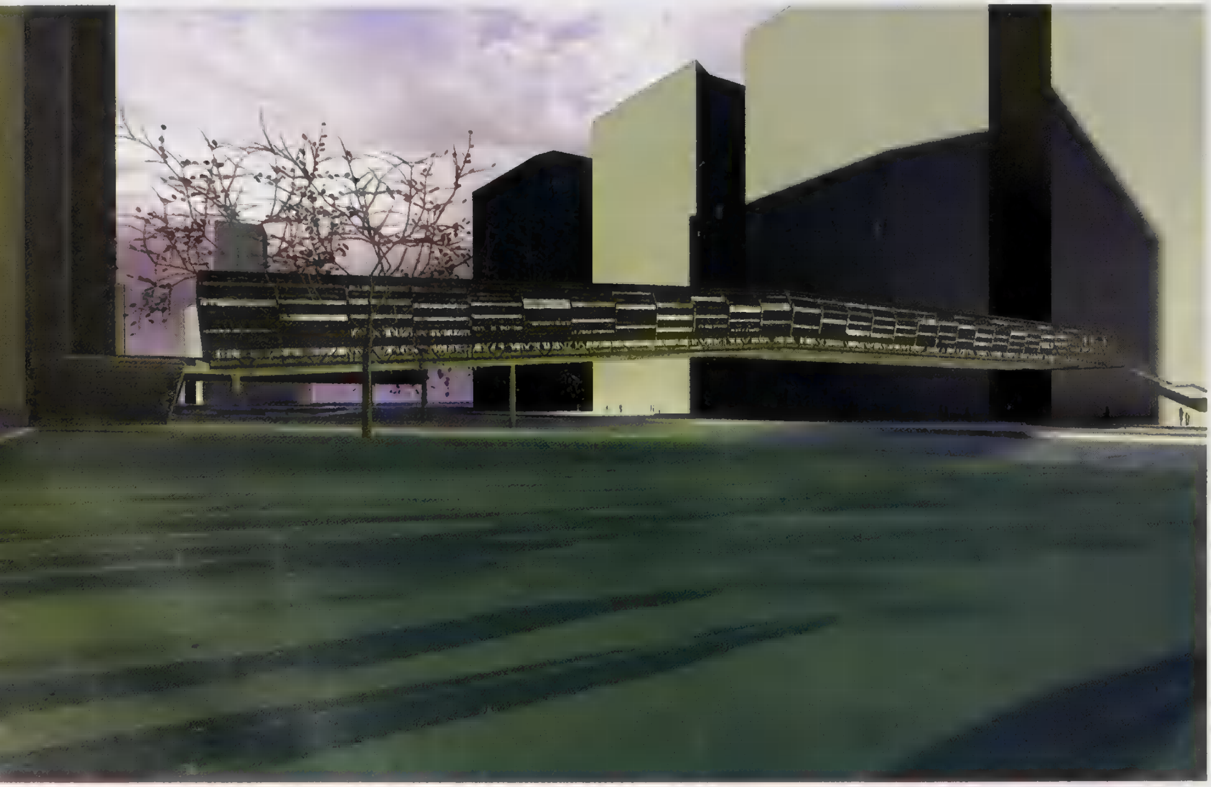
THE CATASTROPHIC EVENTS OF 9/11 ARE CONSISTENT WITH, NOT CONTRARY TO, THE NEW MARKETPLACE.

Network effects

Given all that we know about the global network of the alleged September 11 perpetrators—about the complex, interlinked cellular networks of finance, training, and communication that supported them; about the intangible things, the fear and uncertainty, left it their wake—it has turned out that the catastrophic events of September are consistent with, and not contrary to, the new marketplace and the society of ubiquitous electronic networks predicted by Kelly. Oxford financial historian Niall Ferguson made just this point recently the when he suggested that we may look back from the year 2011 to discover that September 11 will have had little impact on, and indeed conforms with, trends already underway, including the globalization of terrorism, the financial downturn, and the emergence of a new form of imperialism.

Taking a more pessimistic view of what they prefer to call the "society of control," Michael Hardt and Antonio Negri, authors of *Empire* (2000), the highly acclaimed neo-Marxist study of globalization and politics, presciently forecast in their book a new supercapitalist world in which all forms of centralized power and authority will be decentralized, resulting in a complex global network of control ("empire"). Struggle for dominance, for market share in this new world order, they suggest, will no longer be among superpowers, nation states, or even large corporations, but among competing networks of cells that recognize no fixed boundaries.

Whether "society of control" or benign "knowledge society," the challenge facing architecture post–September 11 is not to develop more pragmatic theories of practice. Nor is it to worry about what object will fill the gaping hole left in all our lives when the towers came down. No, the challenge for architecture is to develop forms of practice able to survive and prosper in the fiercely competitive global marketplace where intangible things like brands, experience, identity, terror, fear, and even access, as Jeremy Rifkin tells us in *The Age of Access* (2000), are becoming increasingly important. In order to live up to this challenge, architecture will have to evolve new forms of adaptive design intelligence that will enable it to add value and achieve competitive advantage. This is precisely what the innovative practices mentioned above offer architecture. But it is unclear whether or not architecture will understand or accept them. What does seem certain, however, is that if architecture remains fixated on form and abstract ideas, on flesh and word, as Colin Rowe famously put it, and their combination to create new styles, it will surely lose out to more supple forms of design practice. This is as true for the network we call architecture as it is for the individual, cellular nodes that comprise it. ■



Proposal by SHoP/Sharples, Holden Pasquarelli of New York for temporary pedestrian bridge, Lower Manhattan (2001).

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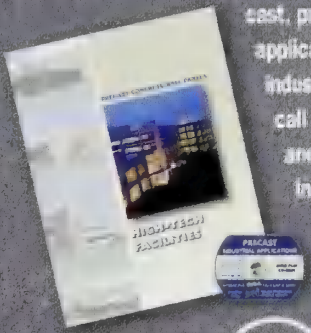

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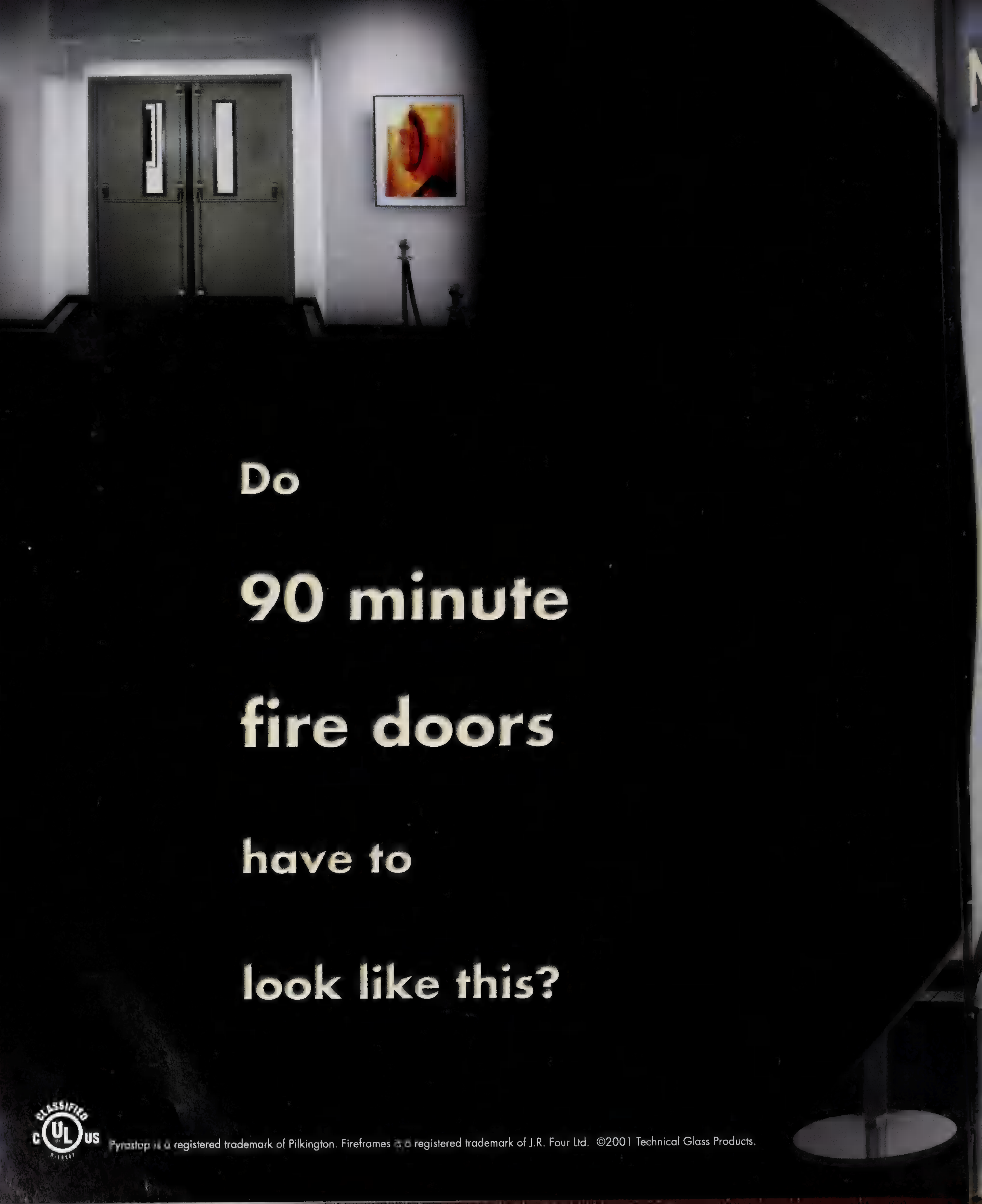

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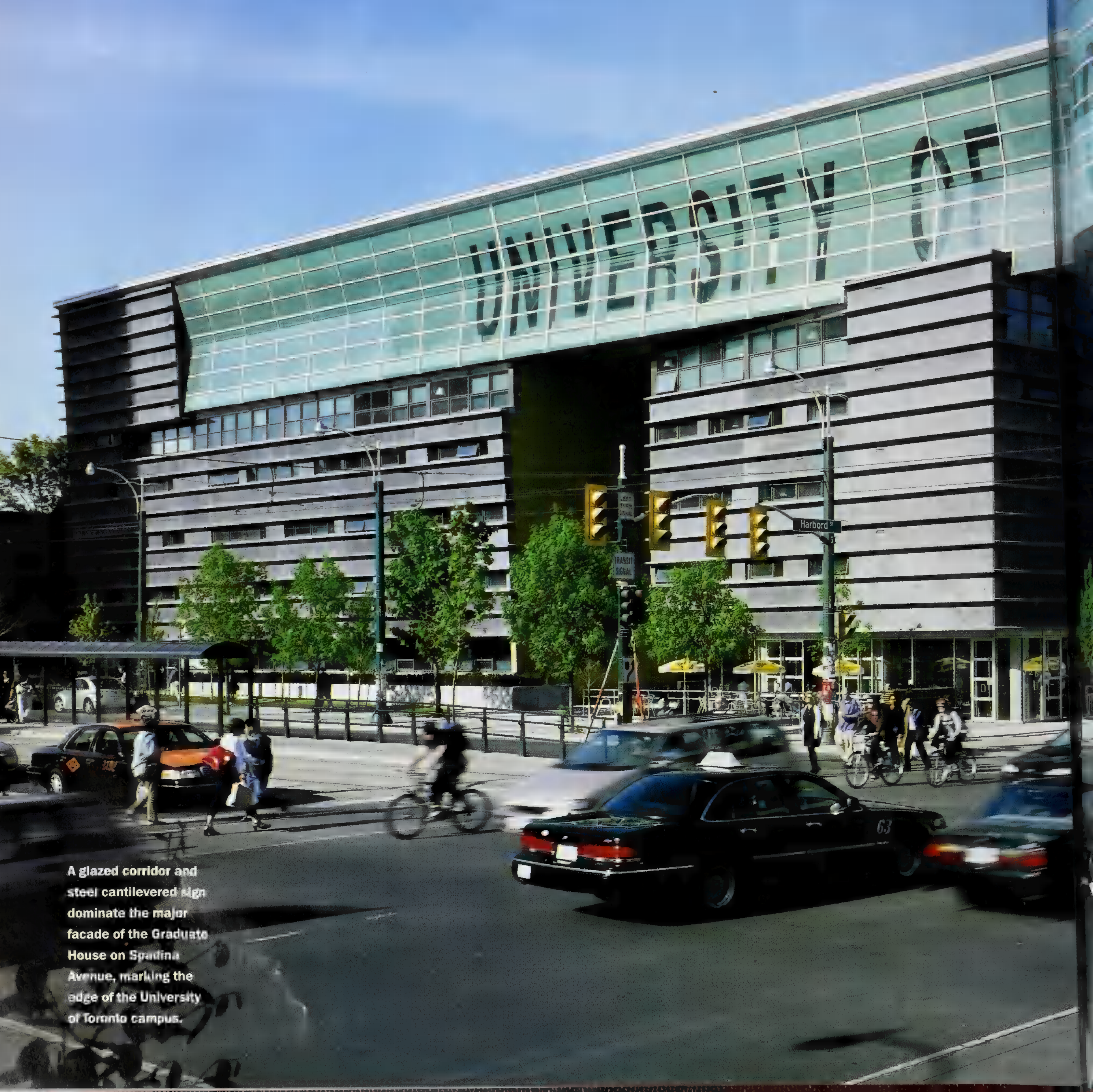
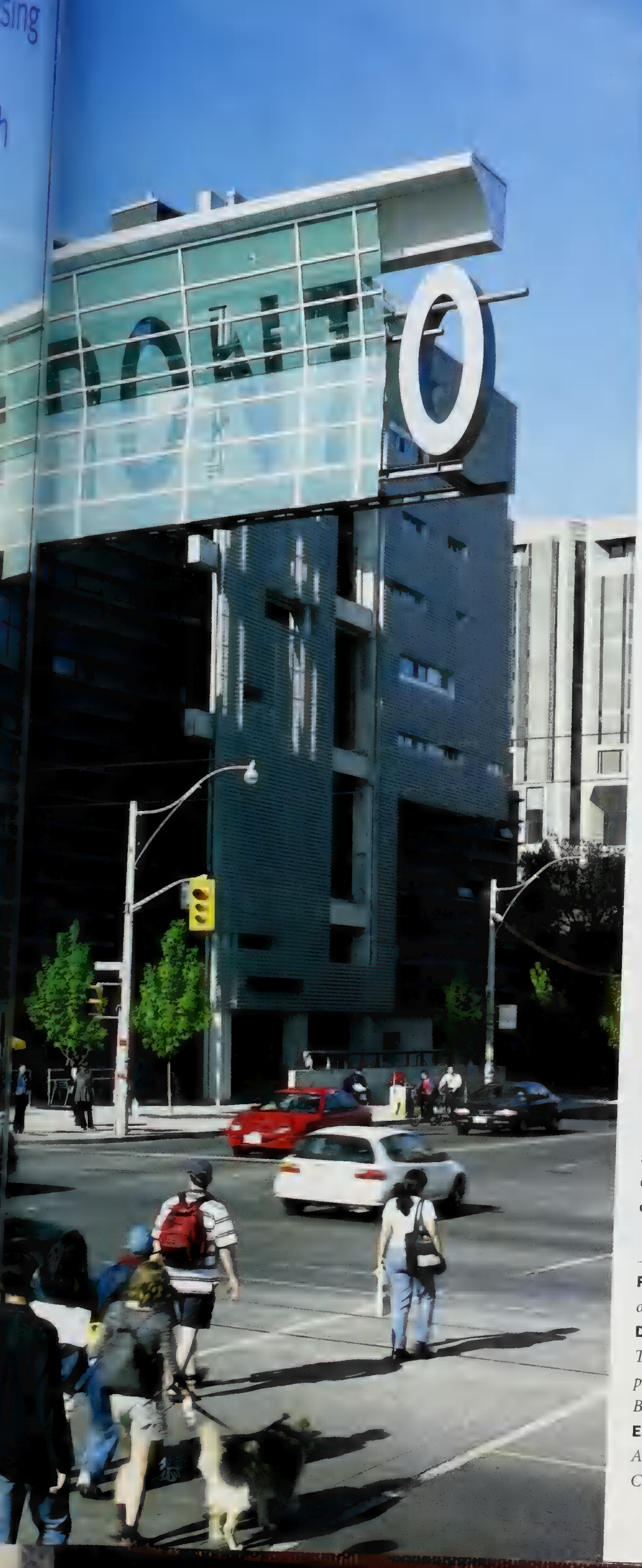
CIRCLE 41 ON INQUIRY CARD

Morphosis's graduate student housing at the **UNIVERSITY OF TORONTO** combines Modernist housing typologies with a brash energy to signal its gateway status



A glazed corridor and steel cantilevered sign dominate the major facade of the Graduate House on Spadina Avenue, marking the edge of the University of Toronto campus.



By Suzanne Stephens

With the limited opportunities architects have to produce housing, it is not too surprising that Los Angeles architect Thom Mayne would seize the chance to design a 434-bedroom residential complex for graduate students at the University of Toronto. He and his firm, Morphosis, entered a limited competition with Toronto architect Stephen Teeple and, happily, won. The bad news was the budget: $85 ($53 American) per square foot for the 230,000-square-foot structure. As Mayne points out, "A parking garage is $55 [American] per square foot."

However, in spite of the constraints, Mayne was able to rework two housing typologies popular with early Modernists—the perimeter block and the skip-stop plan—and give them literally a new twist. Sited at the edge of the university campus, the large, rectilinear structure combines these planning concepts with materials, symbolic expression, and formal considerations in a strong, compelling statement. The planning types are combined and altered by a series of moves that involve cranking portions of the mass off the orthogonal grid to create openings and fissures and then layering these masses with perforated metal screens, aluminum-coated steel panels, glass window walls, and precast planks. On top of that, a walkway and a sign element that juts out over the side street proclaim the housing as a gateway to the University of Toronto campus.

The .79-acre site for the graduate student complex fronts a large four-lane street (not including tracks for the tram). With this assortment of slablike apartment buildings and old houses turned into commercial use, Mayne placed the dwelling units around the edges of an interior open court, under which sit two levels of parking for 158 cars. "The object building wasn't going to work there, so we went to perimeter block housing to give it a massing, height, and horizontality," says Mayne, pointing out how that horizontality is reinforced by the sign jutting out over the street.

To keep the massing low for the community yet provide the density needed for the university's requirements, Mayne made the west-facing portion stretching along the main thoroughfare seven stories high, while the portion along the other side of the court, facing east, rises to 10 stories. Here the block is composed of duplexes arranged in a skip-stop, double-loaded plan, with living rooms on one floor and bedrooms either above or below. With this stacking, hallways with elevators need only occur on the first, third, sixth, and ninth floors.

The skip-stop plan, developed in the mid-1920s, brings to mind

Project: *Graduate House, University of Toronto, Toronto, Ontario*

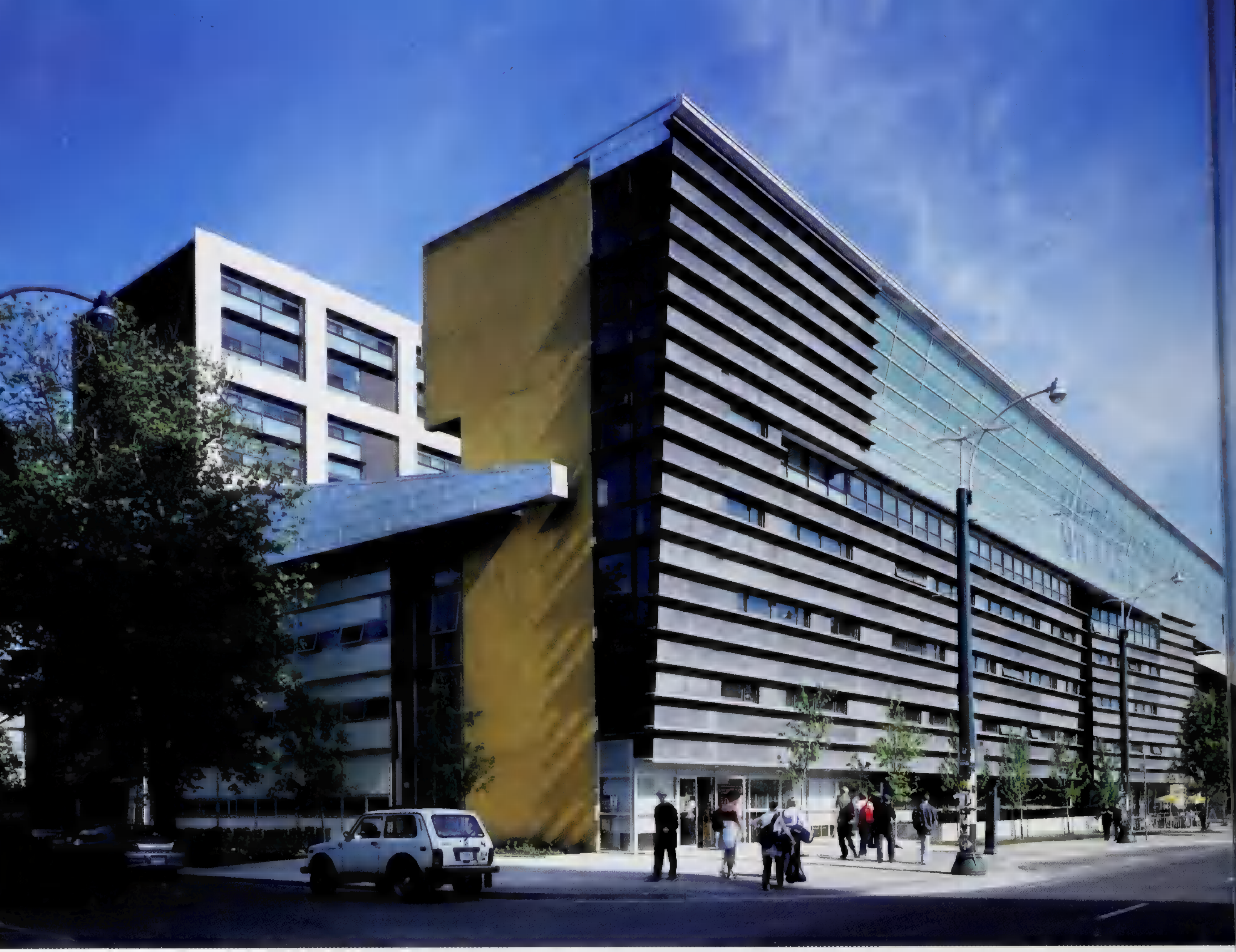
Design architect: *Morphosis—Thom Mayne, principal; Kim Groves, project architect; Stephen Slaughter, Brandon Welling, design team*

Executive architect: *Teeple Architects—Stephen Teeple, principal; Chris Radigan, project manager; Bernard Jin, Rob Knight, Tom Arban, design team*

Client: *Michael Marrus, dean of School of Graduate Studies*

Engineers: *Yolles Partnership, (structural); Carincini Burt Rogers (electrical); Keen Engineering (mechanical)*

Contractor: *Axor Construction*



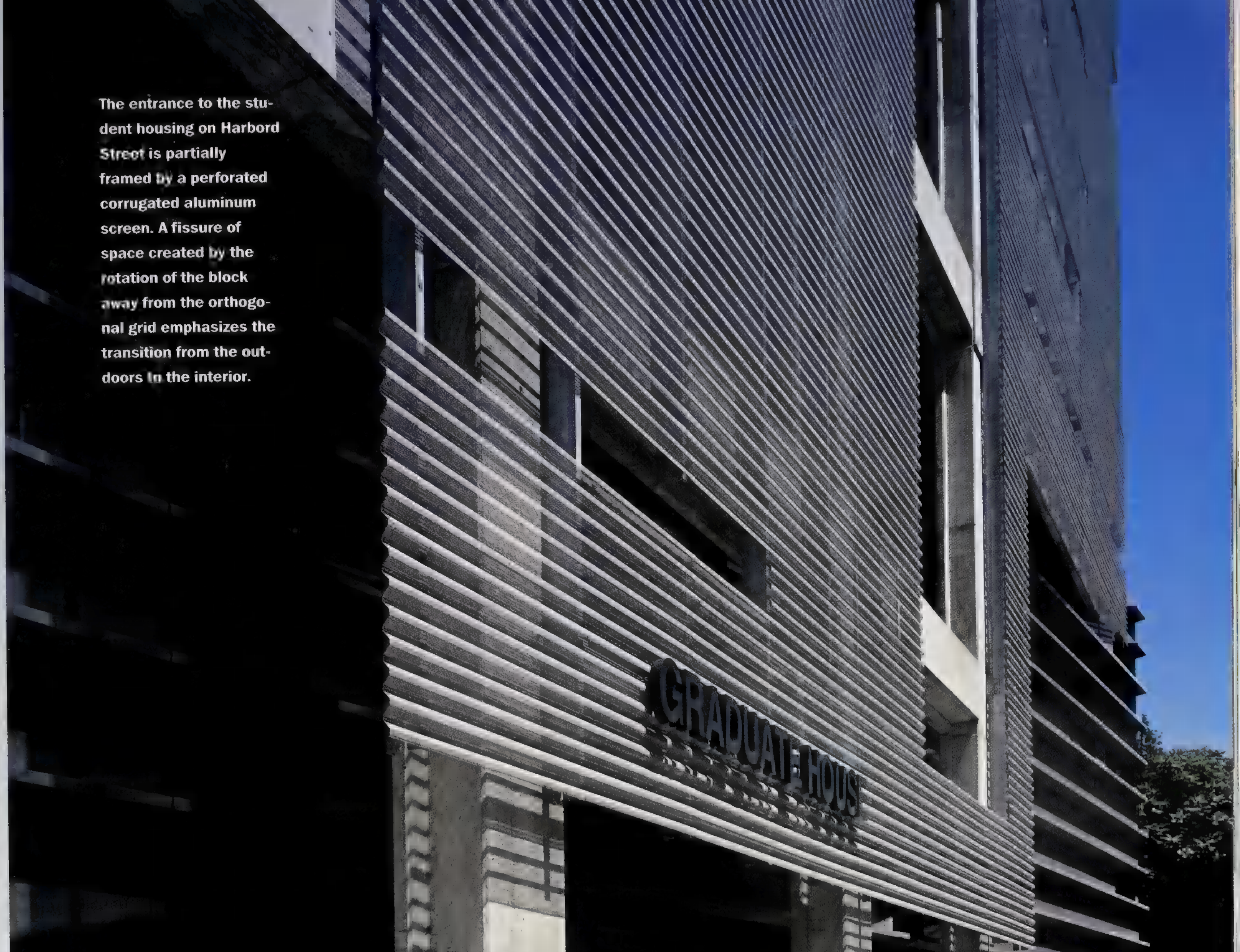
The materials and treatment of each facade vary: On the low-scale, north end (above), a mustard-tinted stucco coats the concrete shear wall, and aluminum shingles cover an abstract gable element. The ribbed concrete planks of the west facade are integrally painted a gray-brown.

Josep Lluis Sert's Peabody Terrace Married Student Housing at Harvard (1965), where, incidentally, Mayne lived as a student at the Graduate School of Design. Nevertheless, he disavows too much willed (or nostalgic) intent in turning to this parti. "It took about 45 minutes to decide to do the skip-stop," he says. "We weren't thinking about reviving the plan—it just seemed doing floor-through units with a lot of natural light was the right move. And reducing the number of corridors was more efficient."

The seven-story portion of the housing facing the main street is devoted to single-loaded corridors and suites: On the second through fifth floors the corridor runs along the inner-court side of the building, while on the sixth and seventh floors it switches to the road side. Here it becomes a large "human cornice," according to the architects, which cantilevers over the side street by virtue of a double-height truss construction. Because of the glazed bar of ceramic frit, where *University of Toronto* is spelled out in clear glass, this west facade becomes the major enchilada—seen by all, sign and circulation are one.

However, the active west elevation is not the entrance facade; instead, the entrance is located on the short end, facing south. The southwest corner rotates away from the orthogonal plan so that the space created by the rupture reads more clearly as an entrance. All facades are treated differently: Because of the polyglot neighborhood, it made sense

PHOTOGRAPHY: © STEVEN EVANS



The entrance to the student housing on Harbord Street is partially framed by a perforated corrugated aluminum screen. A fissure of space created by the rotation of the block away from the orthogonal grid emphasizes the transition from the outdoors to the interior.

PHOTOGRAPHY: © STEVEN EVANS

for each facade to relate to the scale of its particular micro-context. Therefore, the short end of the north side of the block is treated as a more intimate, abstracted version of a house, albeit with aluminum-coated steel shingles and a gable element. What would normally be the back side, the elevation facing east toward the rest of the university campus becomes a window wall masked with a filigree of perforated metal. Attached to vertical fins of a standard aluminum and glass window system, the screens create a shimmering effect and partially reveal the elongated fenestration.

The use of materials and massing may seem brash or overly muscular at first glance, but a closer look reveals a sensitivity in the architect's use of proportion and scale. There are some drawbacks to be sure: Some apartments, in which bedrooms range from 118 to 270 square feet, have more light, space, and windows than others. Some of the fenestration on the east facade is masked over; however stunning this scrim, it may not be preferable to uninterrupted views. The dark brownish-gray pigmentation of the ribbed concrete facade on the street and on the court's stuccoed base seen in contrast with the grid of light precast concrete panels looks stark on a gray, wintry day. The courtyard, which has a pool running around the periphery, with an elevated "pier" diagonally crossing through the center, is drained in the winter. The result is rather bleak, particularly since there is so little planting (one tree!) in the courtyard itself. Nevertheless, the balance of formal strategies, materials, and planning types is well thought out. The poured-in-place concrete shear wall and slab construction, much of which is exposed inside, bring a tough, lean, but calm sense to the whole. Even the interior halls and public spaces benefit from ample natural lighting and modulation of the ceiling plane. In taking on the problem of budget housing for a university, Mayne has shown that early Modernist housing typologies can yield an architectural richness today. ■

Sources

Precast concrete panels: *Global Precast*

Steel truss: *Torsteel*

Perforated corrugated anodized aluminum: *Vicwest*

Window wall and curtain wall: *Allan Windows*

Paints and stains: *Sherwin Williams*

Plastic glazing: *CPI*

Acoustical ceilings: *Armstrong*

Plastic laminate: *Formica*

Resilient flooring: *Marmoleum by Forbo*

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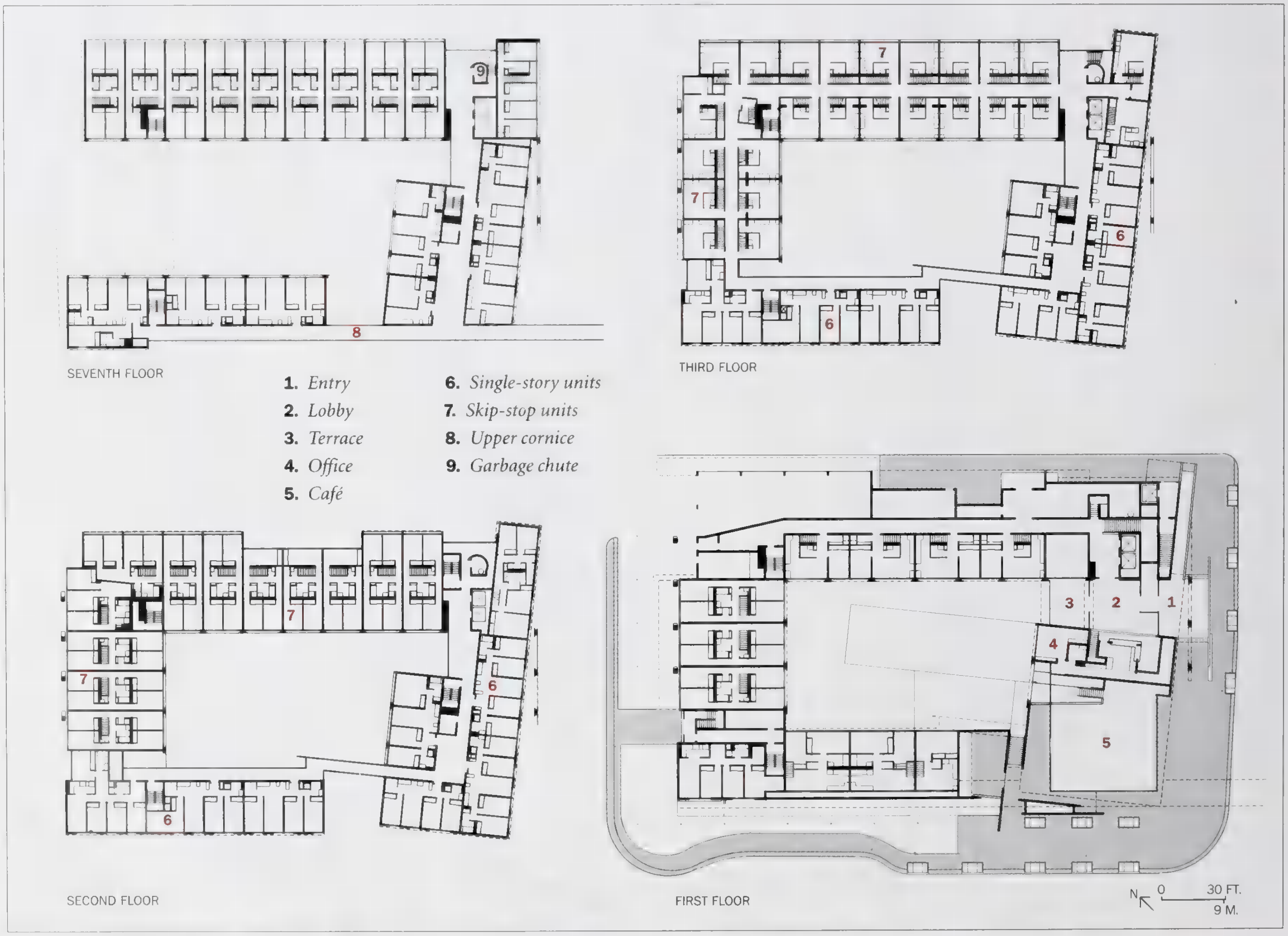
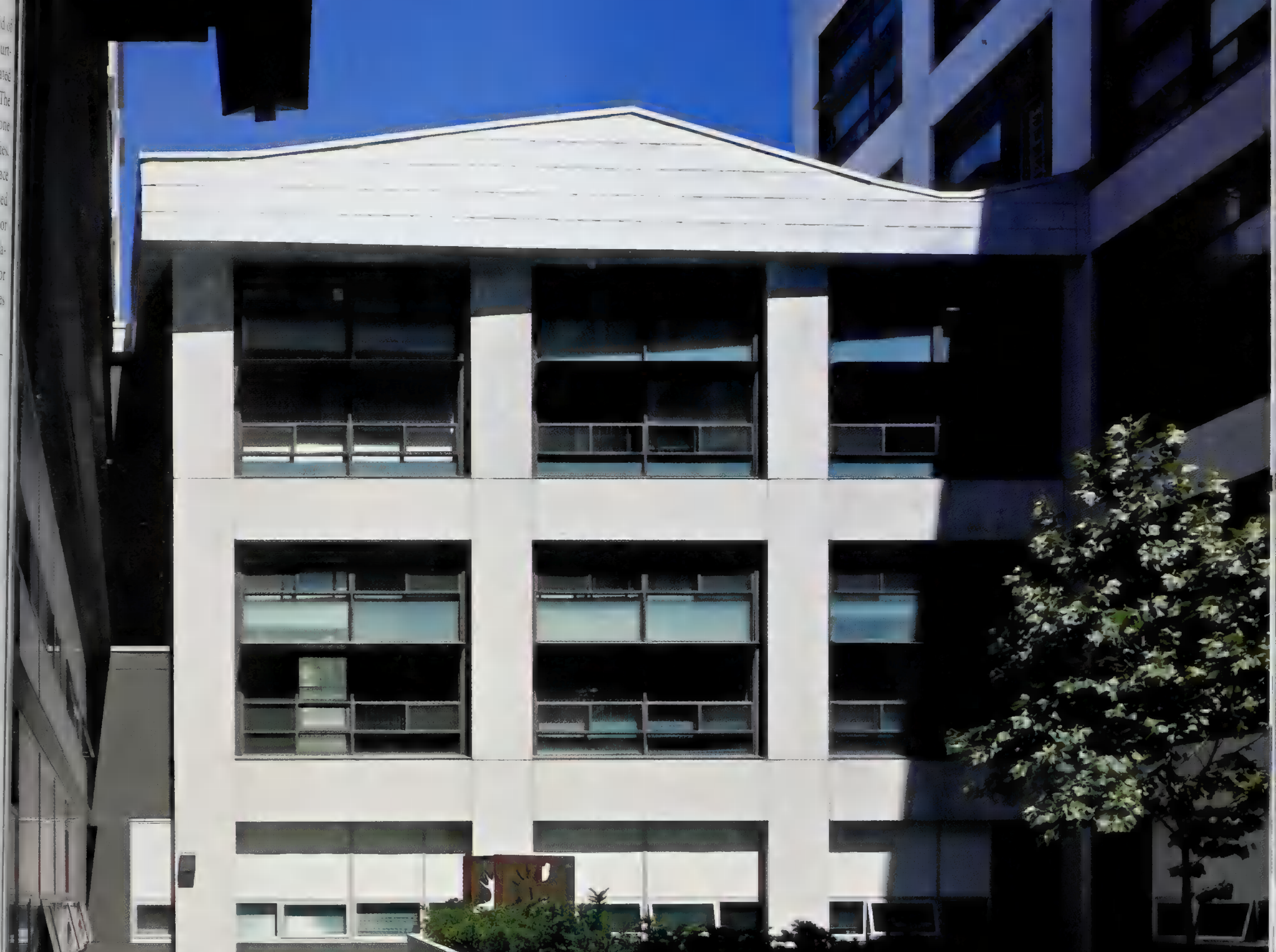


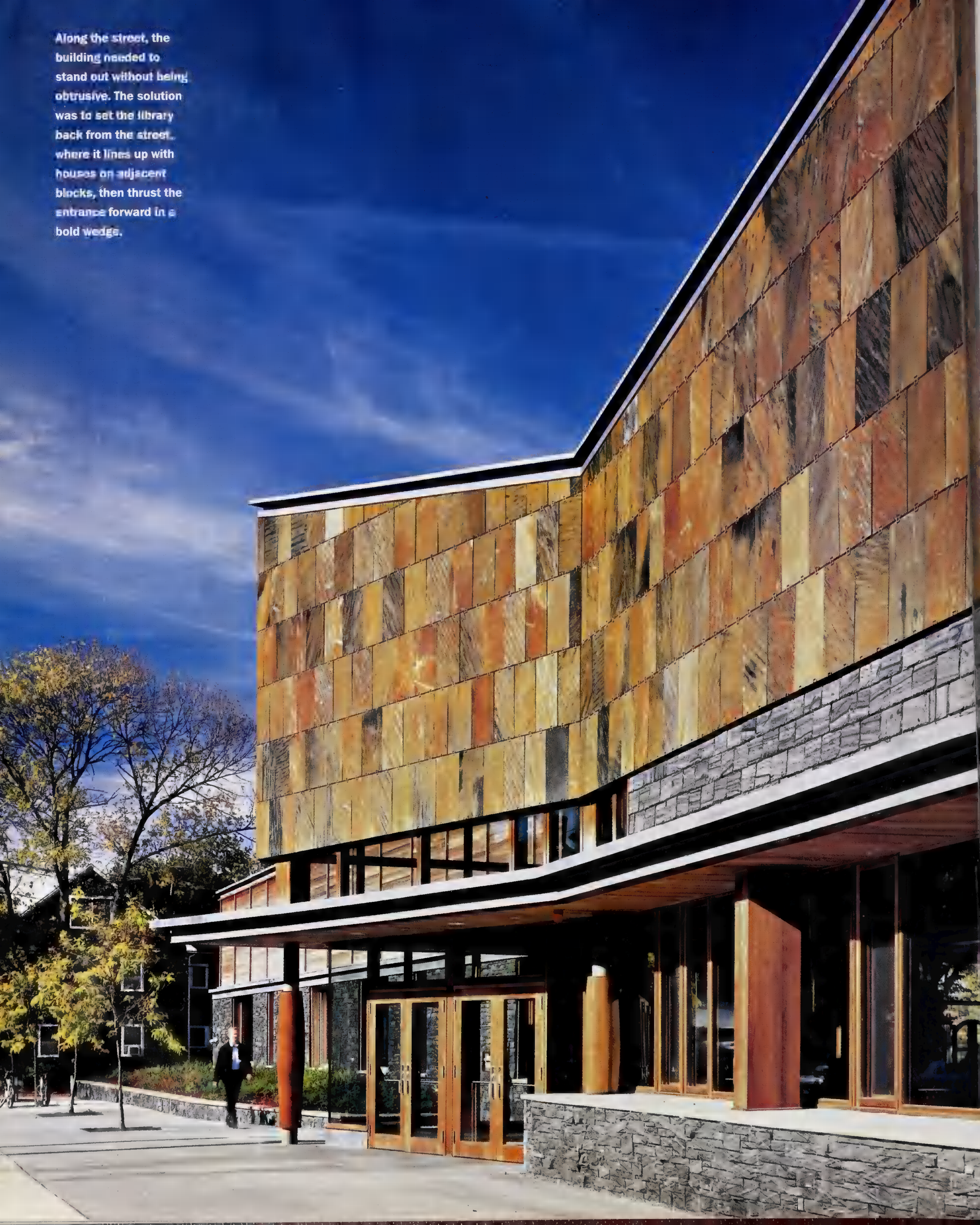
1. *Entry*
2. *Lobby*
3. *Terrace*
4. *Office*
5. *Café*
6. *Single-story units*
7. *Skip-stop units*
8. *Upper cornice*
9. *Garbage chute*

PHOTOGRAPHY: © TOM ARBAN (ABOVE); STEVEN



Many of the 121 residential units overlook the interior courtyard (above). The open space is dramatized by an elevated pierlike element with plantings and elongated pools around the edges. Precast concrete panels on the inner walls of the court bounce daylight into the units.

PHOTOGRAPHY: © TOM ARBAN (ABOVE); STEVEN EVANS

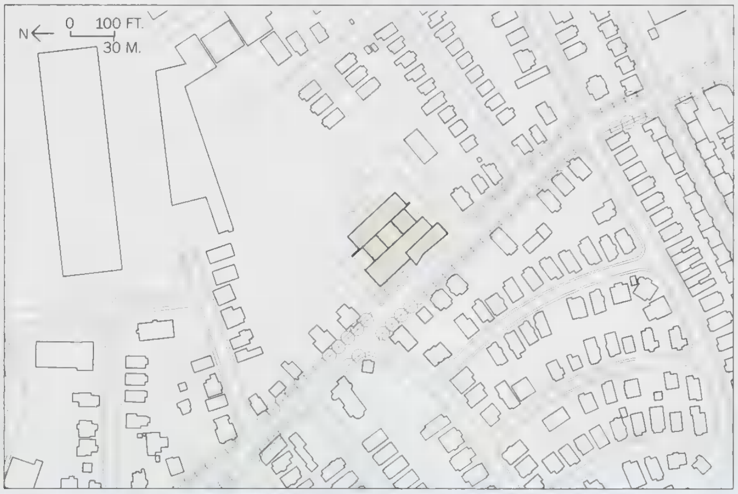


Along the street, the building needed to stand out without being obtrusive. The solution was to set the library back from the street, where it lines up with houses on adjacent blocks, then thrust the entrance forward in a bold wedge.

PHOTOGRAPHY: © MICHAEL MORAN

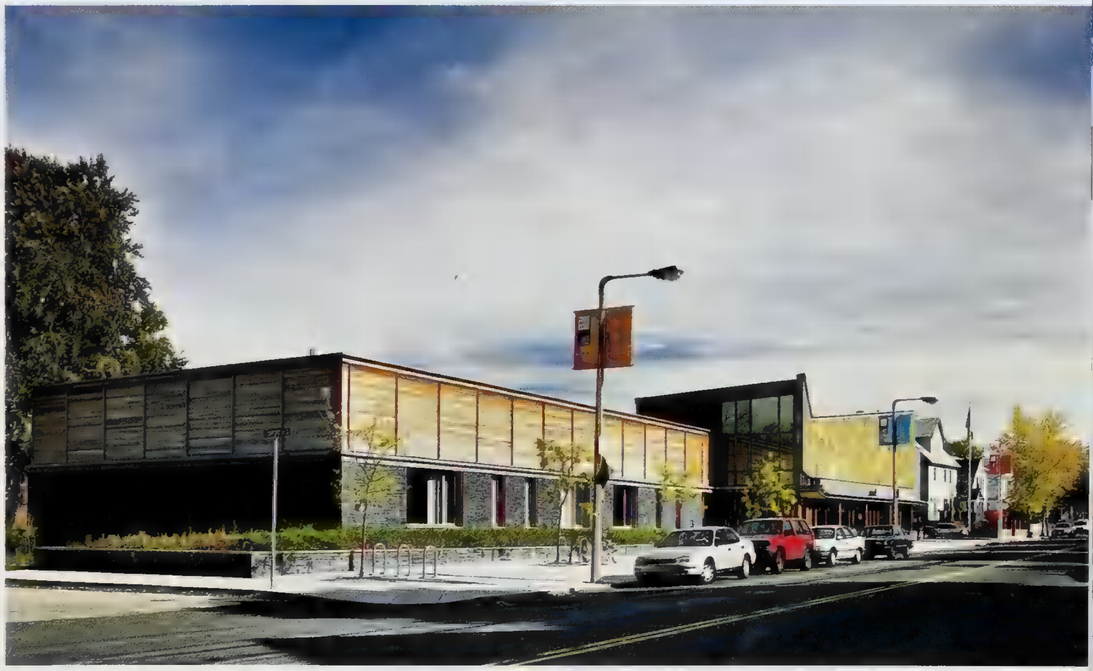
At the new **ALLSTON LIBRARY, Machado and Silvetti** pleases the public with a casual, stylish building that's more a community center than a place for books

By Robert Campbell, FAIA



At the new branch of the Boston Public Library in the Allston neighborhood, the winter light seems to flow uninterrupted from the sidewalk to the Amelanchier trees in the inner courtyard garden. This is a building that opens itself with trust to the street and the world.

Public buildings today, as everyone knows, are designed by collaboration—not only of architects with civic administrators, but also with neighborhood residents (and sometimes other advocacy groups). In Allston, the architects were the Boston firm of Machado and Silvetti (Jorge Silvetti chairs the architecture program at Harvard's Graduate School of Design). For a long time, Machado and Silvetti were stylists whose work was more often published than built. In the Allston library and other recent works, they've learned to please the public without sacrificing their integrity.



PHOTOGRAPHY: © MICHAEL MORAN

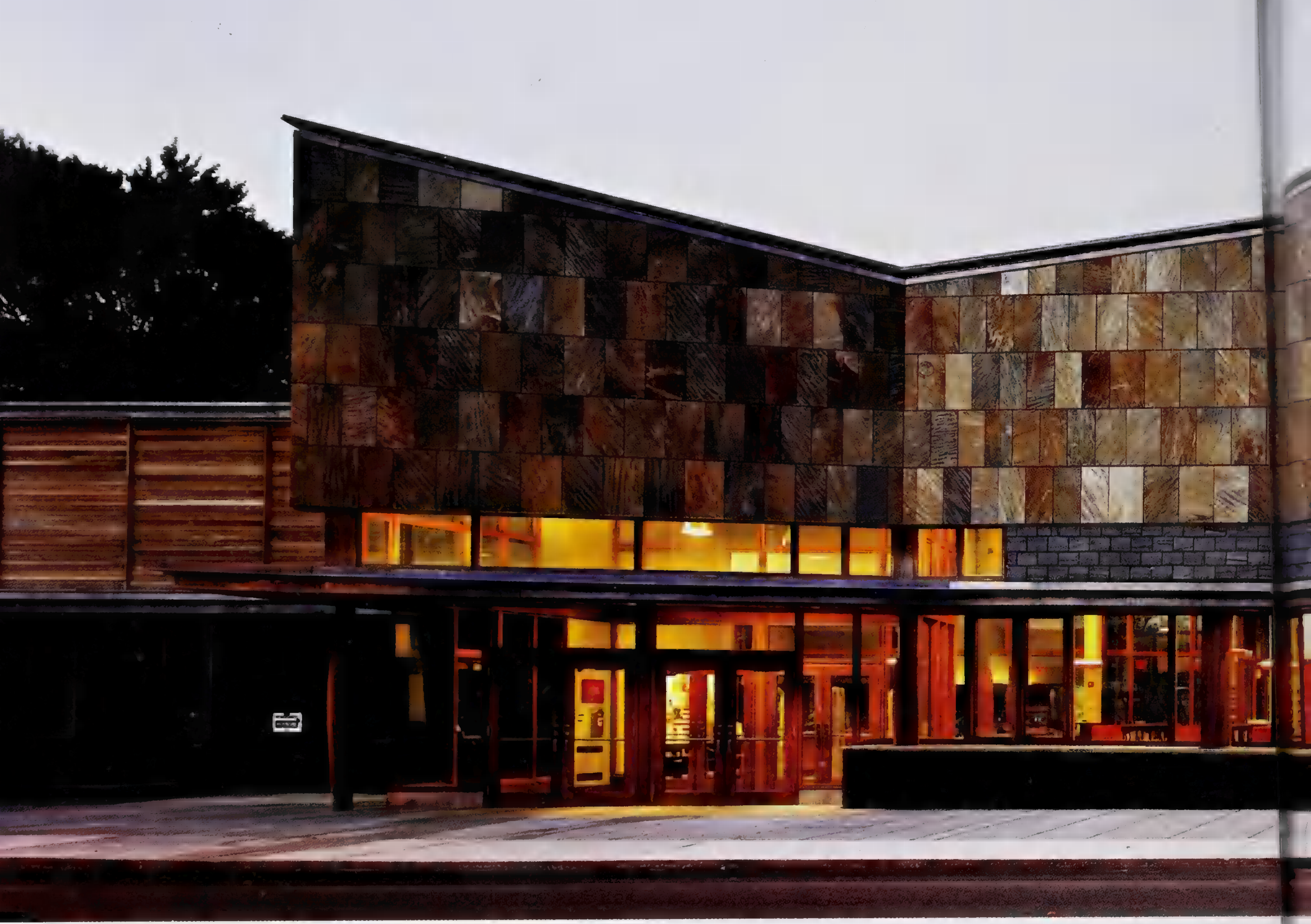
Neighbors were worried they would get a building that would overscale the modest wood-frame residential streetscape. They also didn't want anything that would look too (gasp) modern. The architects responded with a building that fits comfortably into its surroundings but doesn't look shy or old-fashioned (although there's a whiff of a fifties "Danish Modern" aesthetic). For efficiency, the library is a one-story plan, but it asserts a civic presence by rising to a double-height interior volume along the street. There it looks like a two-story building, because the architects have divided the facade into tiers: a lower level of rough blue-gray Vermont slate, and an upper tier of smooth Norwegian slate panels of a variegated coppery color. The library thus reminds one of the Boston two-family houses that put on a sweater of maybe asphalt shingles upstairs, with perhaps stone veneer below. It's contextual in a way that is simultaneously amused and respectful.

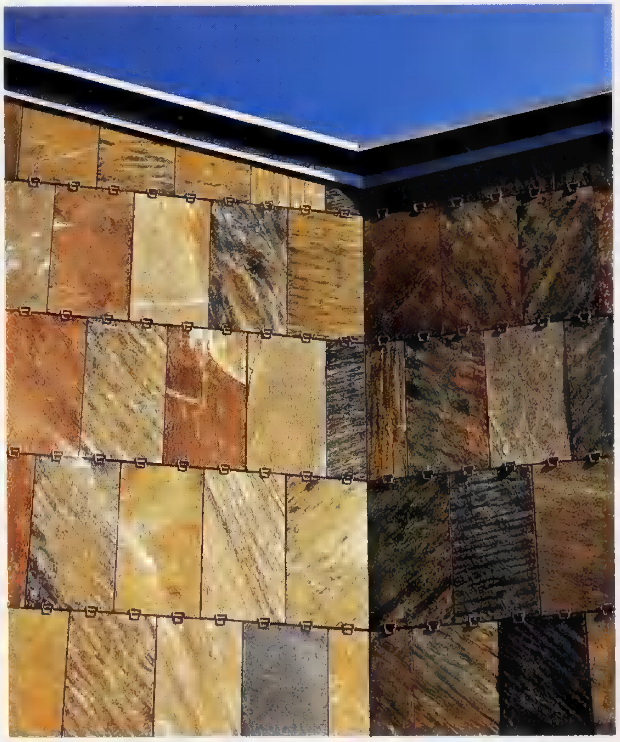
Along the street, the design problem was to make the building

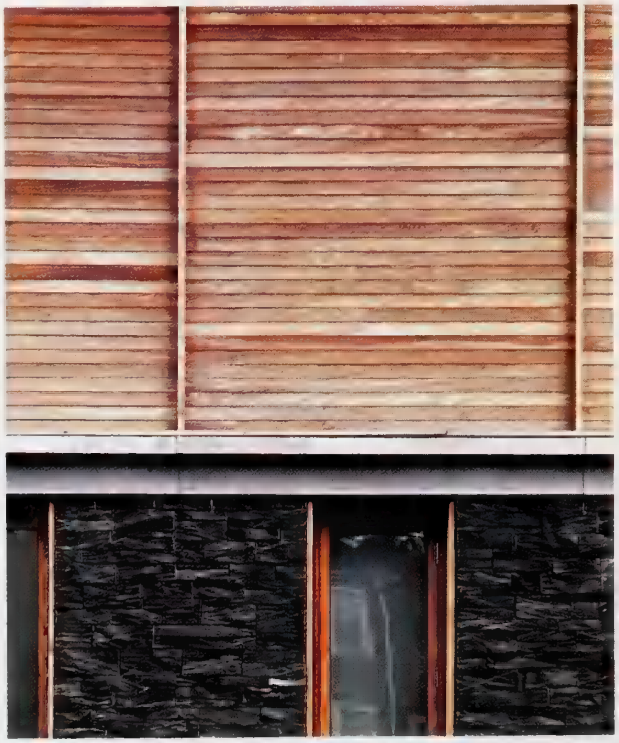
Contributing editor Robert Campbell, FAIA, is the Pulitzer Prize–winning architecture critic for The Boston Globe.

Architect: *Machado and Silvetti Associates—Jorge Silvetti, principal in charge; Rodolfo Machado, consulting principal; Timothy D. Love, project director; Matthew T. Oudens, project architect; Michael Le Blanc, Gregory G. Canaras, design team*
Client: *The City of Boston, Department of Neighborhood Development for the Boston Public Library*
Consultants: *Lim Associates (structural); TMP Consulting Engineers (mechanical/electrical); Robert W. Sullivan (plumbing)*

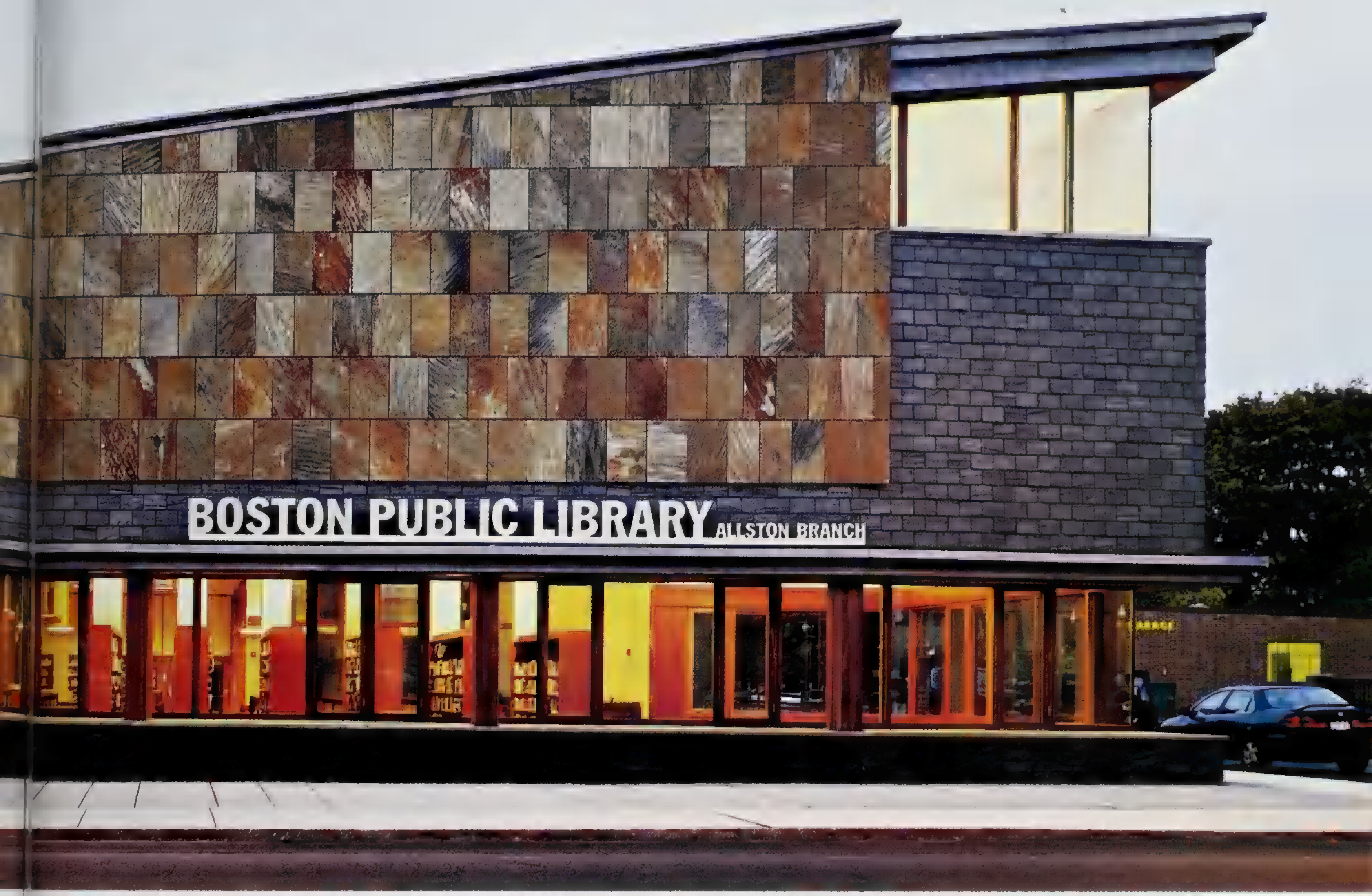
Size: *20,000 square feet*
Cost: *$6.3 million*







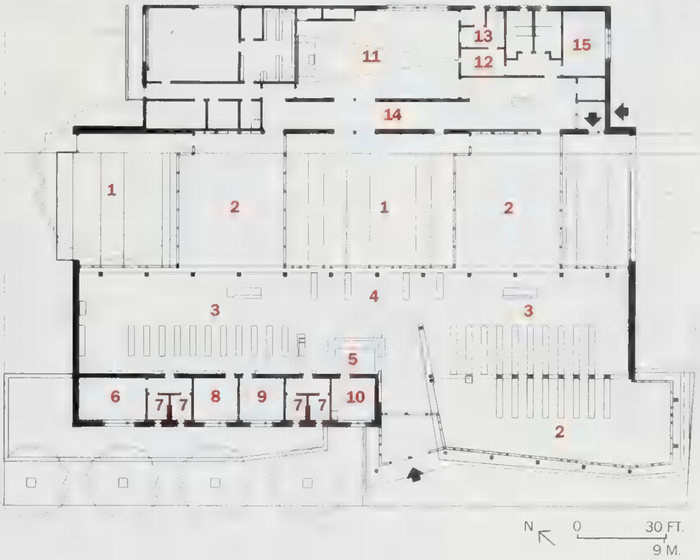
The library looks like a two-story building because the architects divided the facade into tiers (above). They went to great lengths to avoid a uniform institutional ambience by varying materials (left). On the main facade, besides the two kinds of slate used in upper and lower registers, there's yet a third slate in the form of hanging shingles (far left).



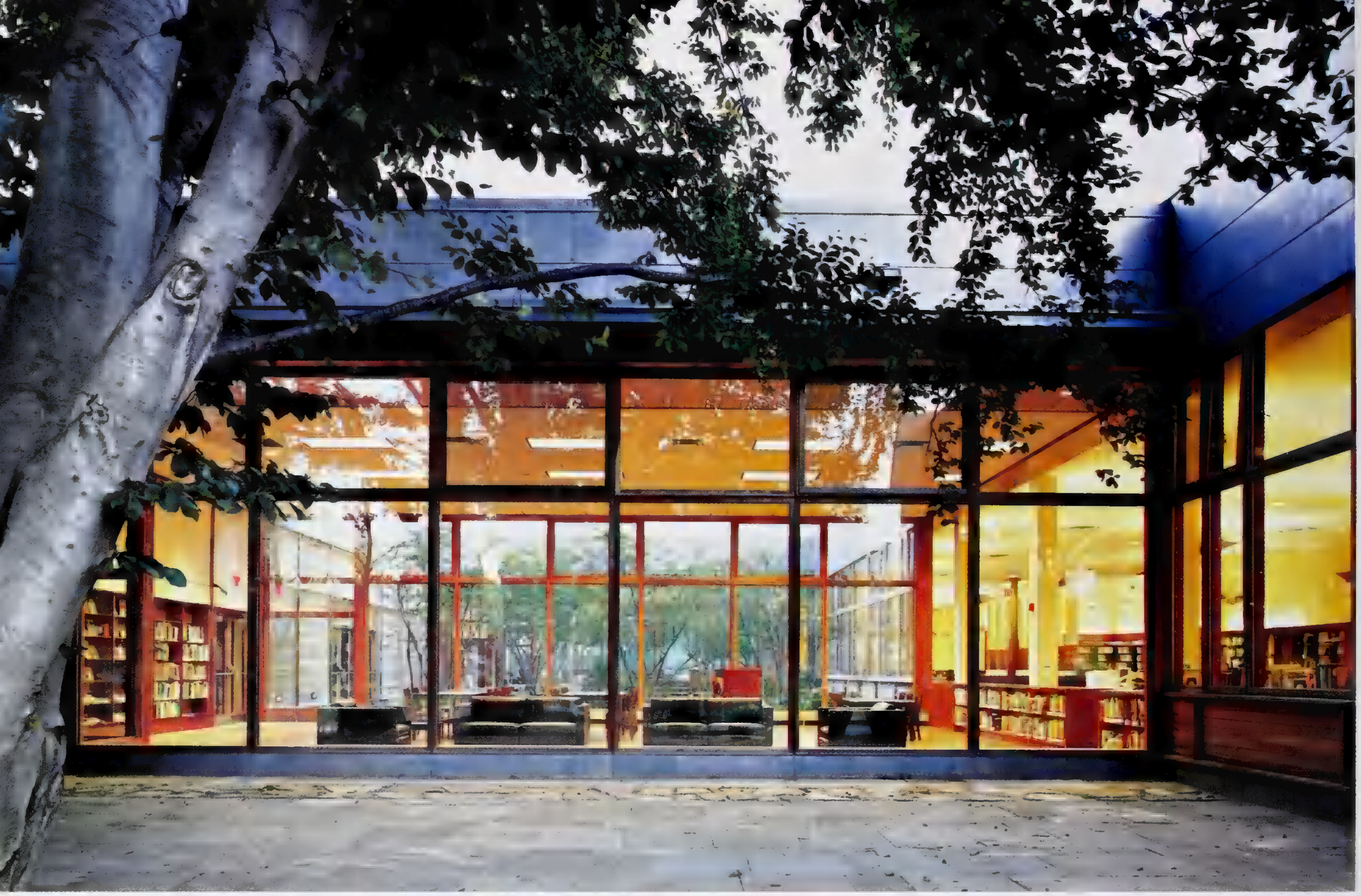
stand out without being obtrusive. The solution was to set the library back from the street, where it lines up with houses on adjacent blocks, then thrust the entrance forward in a bold wedge you can't miss when you drive by.

The clear, simple plan is four stripes, all parallel to the street. First comes the street-front building, containing the books, the reading rooms, and the staff, lining the sidewalk with windows that open a welcoming view of the interior. Second is a stripe of mostly open-air garden courtyards, including a children's reading garden beneath a fairy-tale-size, 75-year-old copper beech, painstakingly protected during construction. Next is another stripe of building, containing meeting rooms and backup spaces. Finally comes an outdoor stripe of parking.

Architecture buffs will quickly spot the influence of Alvar Aalto in many of the materials and details: the cork floors, the wood jackets on the steel columns. The architects go to great lengths to avoid a uniform institutional ambience by continually changing materials. On the main facade, besides the two kinds of slate on upper and lower tiers, there's yet a third slate in the form of hanging shingles. And there is unfinished mahogany that should bleach and weather in a Kahnian manner. Around the courtyard, walls are sheathed in lead-coated copper. Cabinets and furniture are made of walnut and mahogany. On the floor, the usual cork is varied with oak, bluestone, and vinyl tile. Sometimes the mix of so many materials feels fussy, like a display of samples you might see in a manufacturer's showroom. But it works to keep things casual. The Allston



1. *Reading gardens*
2. *Reading rooms*
3. *Stacks*
4. *Audio-visual/reference*
5. *Circulation desk*
6. *Lounge*
7. *Bathrooms*
8. *Study room*
9. *Office*
10. *Workroom*
11. *Community room*
12. *Projection room*
13. *Kitchen*
14. *Gallery*
15. *Conference room*



The winter light seems to flow uninterrupted from the sidewalk to the Amelanchier trees in the inner courtyard garden (above), which includes a children's reading garden beneath a fairy-tale-size, 75-year-old copper beech (left).

library isn't a suit, it's dress-down Friday. "It was necessary to counter the antimodernist feeling in the neighborhood with texture," says Silvetti. "We wanted materials that would gain a patina with age." The honey locust trees along the sidewalk are another layer of softening patina.

What's puzzling about the library is that there are so few books. There is shelf space for only 37,000 volumes. The paucity of books is an index of the way libraries are changing. They are, increasingly, community centers, art galleries, children's story nooks, gardens, computer banks, video swaps, coffee bars, bulletin boards, meeting rooms—anything but book stacks. It's all healthy and democratic and good for community and social life, of course. But maybe there could be lots of books, too.

That's not the architects' problem. As a building, Allston is a triumph of what you might call the architecture of democracy. The collage of many materials becomes a symbol of the pluralism of the design process. The cowboy and the farmer can be friends, the old song says. Here, read the architect and the neighborhood. Harvard University deserves credit for friendship, too. It donated the land, as an early diplomatic step in making acquaintance with a neighborhood into which it plans to expand in a major way. The Allston library is a winner on all counts. ■

Sources

Exterior cladding: *Vermont Structural Slate (slate shingles and panels)*

Wood windows and doors: *Duratherm Window Corporation (Jarrah exterior—unfinished; African mahogany interior—clear finish)*

Seating: *Phister (lounge seats); Knoll Studio (leather chairs and sofas); Agati ("white collection" side chairs and armchairs); Herman Miller ("Aeron" chairs)*

Reception furniture, desks, carrels: *Huston and Company*

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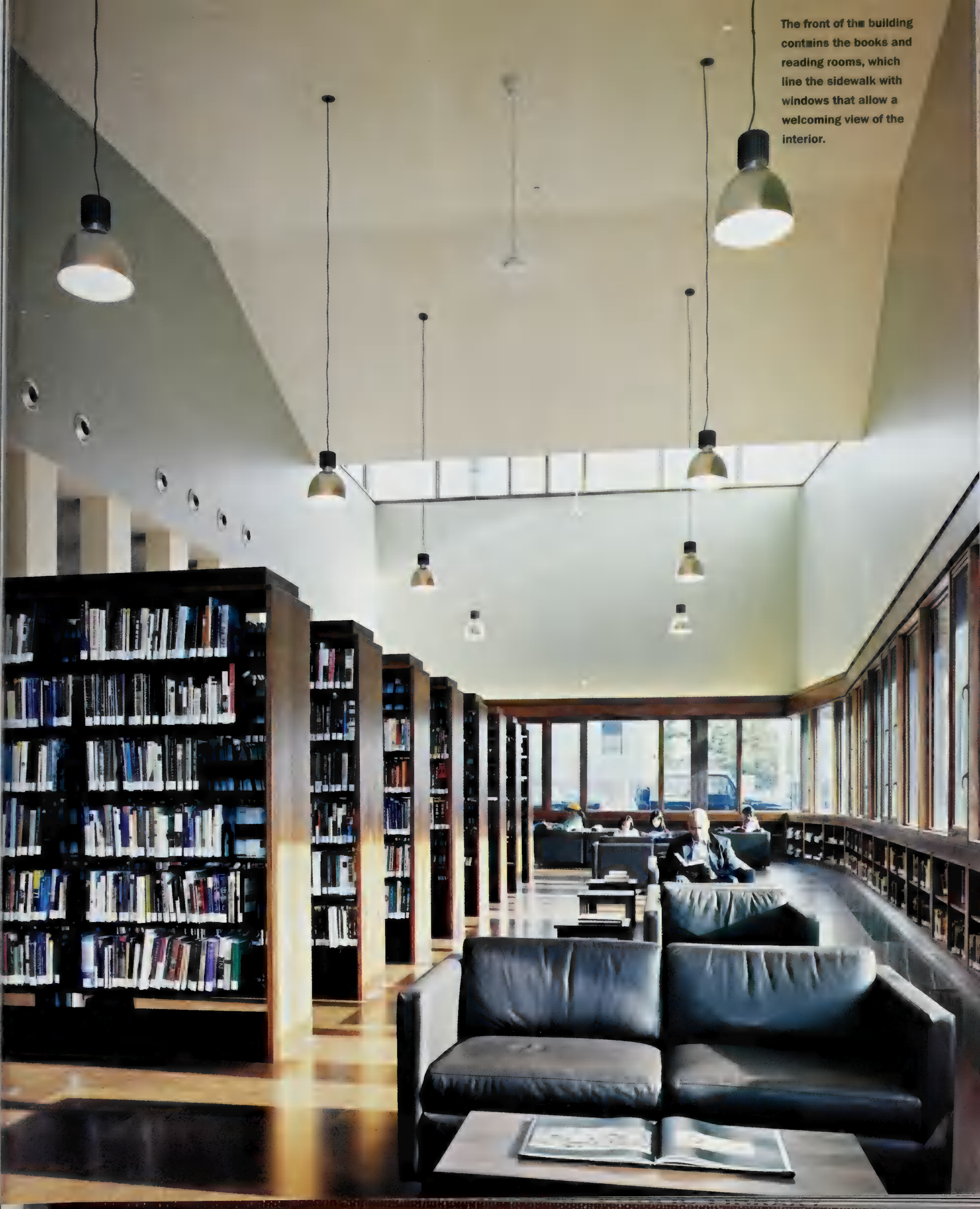
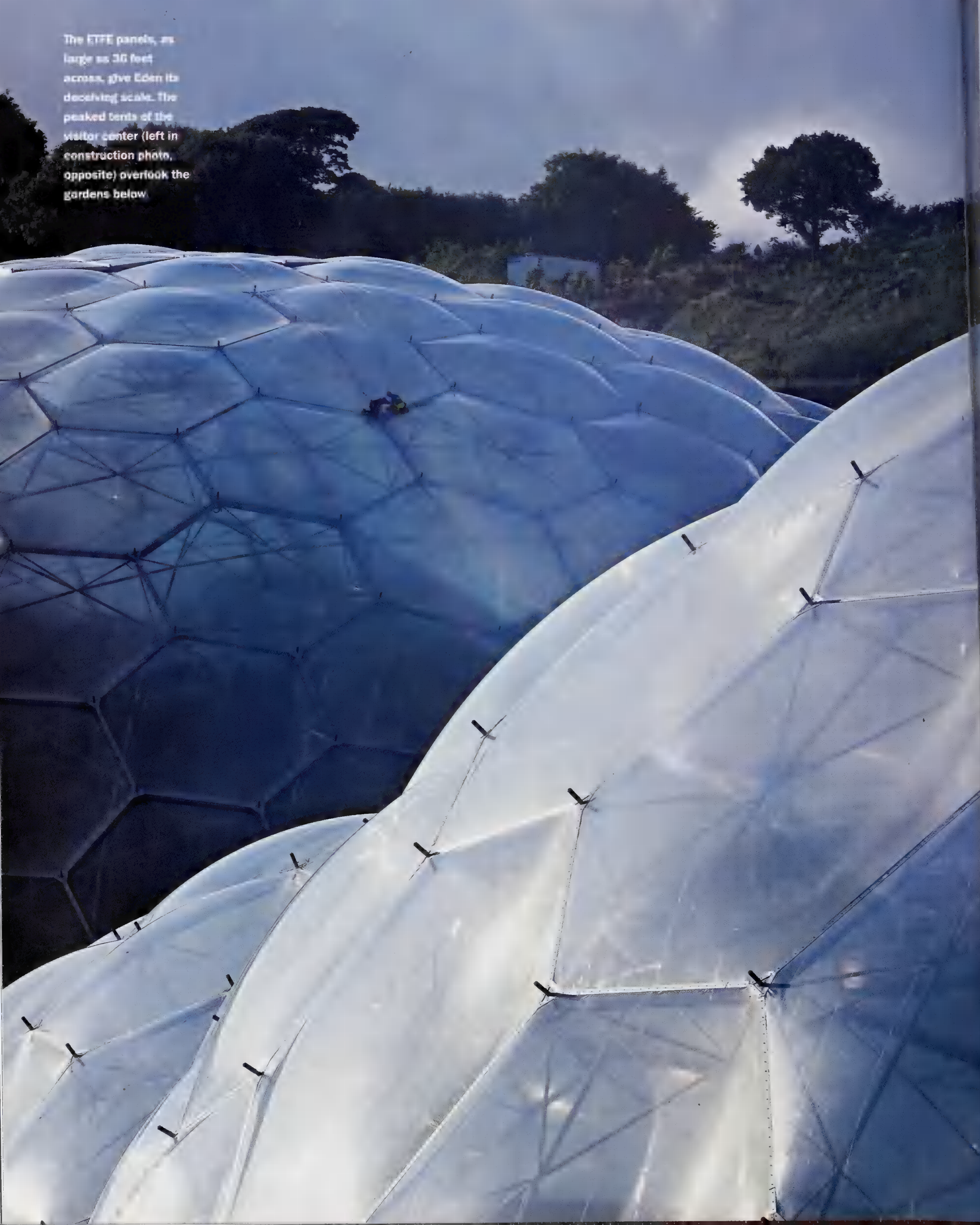
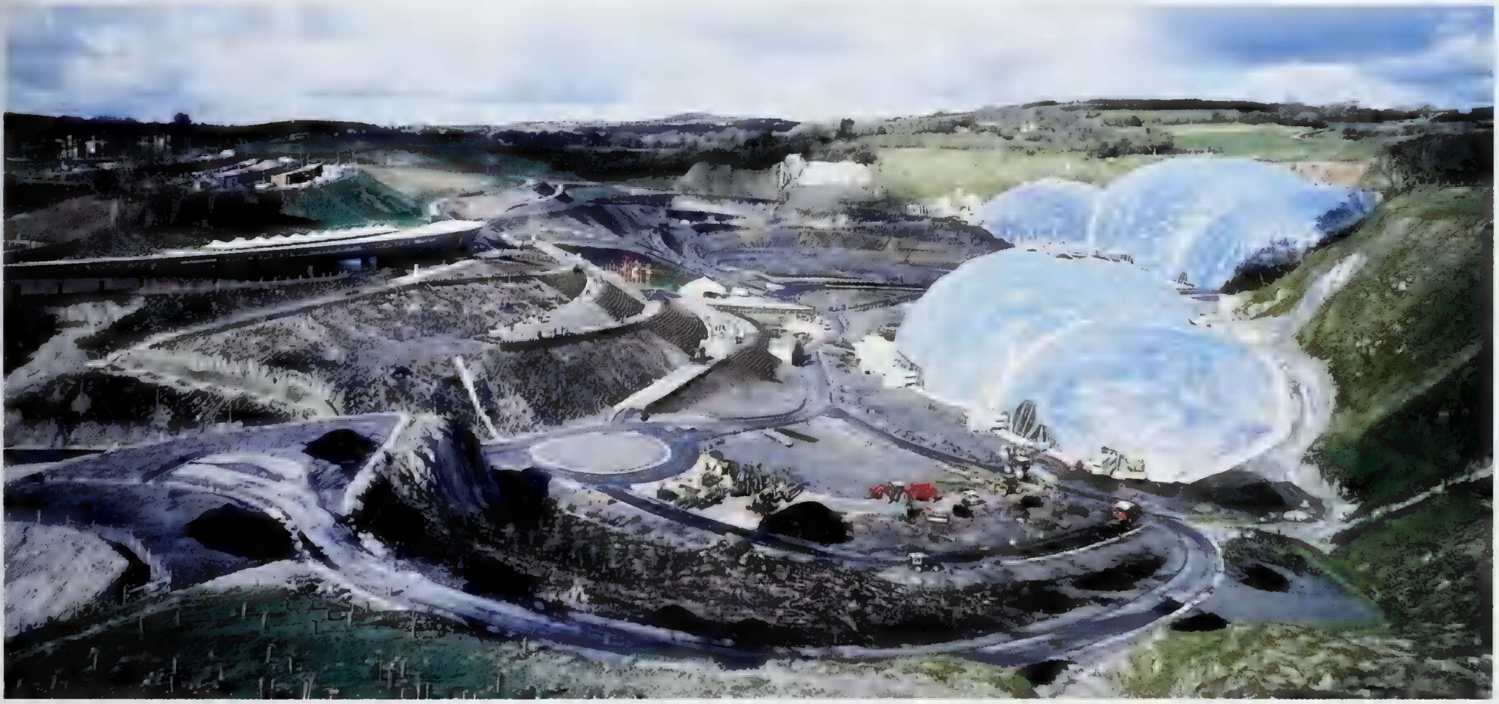


The front of the building contains the books and reading rooms, which line the sidewalk with windows that allow a welcoming view of the interior.



The ETFE panels, as large as 36 feet across, give Eden its deceiving scale. The peaked tents of the visitor center (left in construction photo, opposite) overlook the gardens below.

With domes that bubble out of Cornwall's ruined landscape, Nicholas **Grimshaw & Partners** gives the **EDEN PROJECT** a sci-fi twist



PHOTOGRAPHY: © BENEDICT LUXMOORE

By James S. Russell, AIA

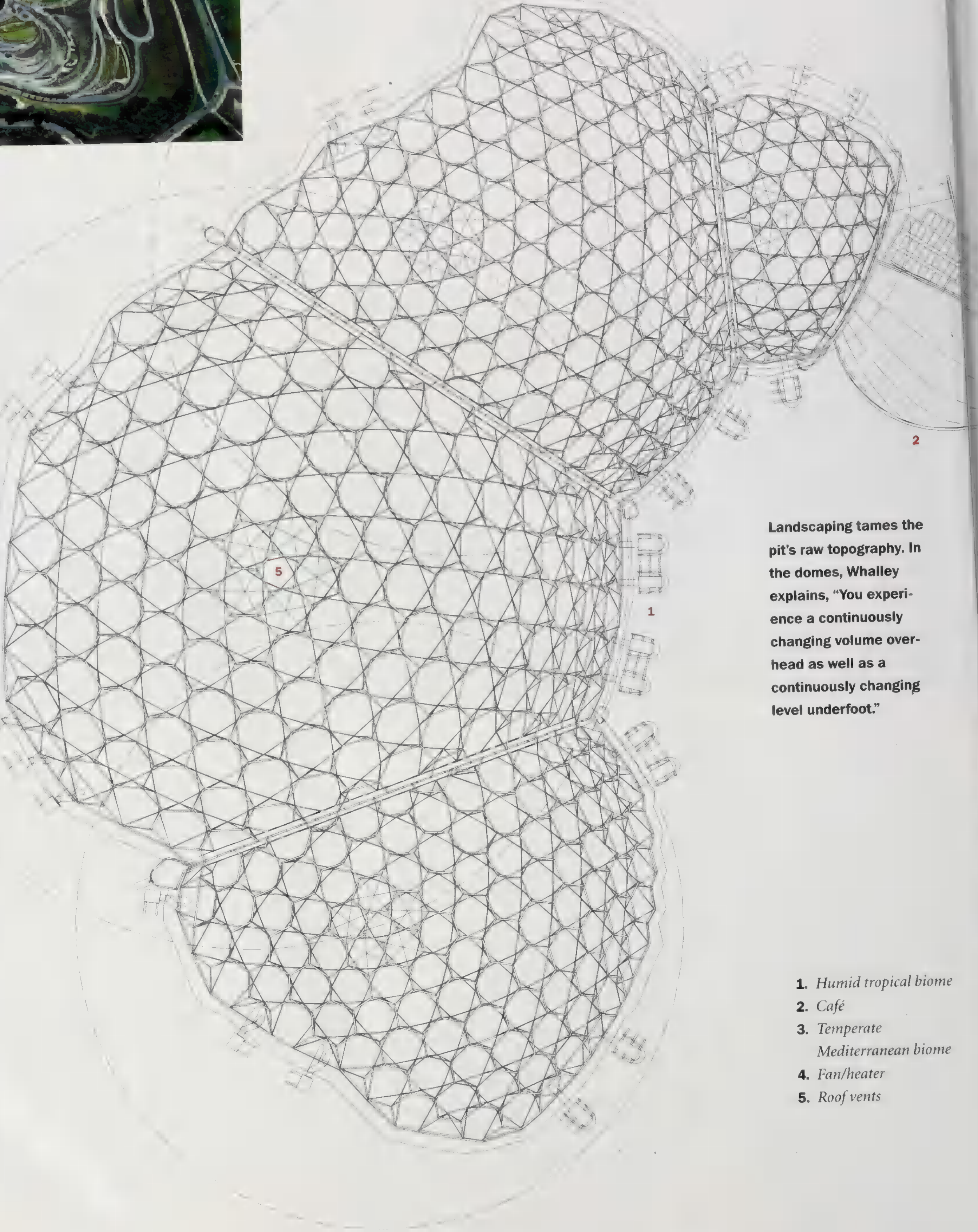
Only a few years ago, the site of the Eden Project was a 37-acre open-pit mine giving up its last truckloads of china clay. Nowadays, while parking in one of the many lots sliced into the edge of the pit, you get no hint of the site's past nor its remarkable transformation. The sense of the place is tightly orchestrated as you reach the visitor center, under an entrance passage roofed by a fabric tent tautly stretched to a rammed-earth wall. There, driftwood-art wooden horses greet visitors, gesturing them toward waiting lines roped in garden hoses and buckets.

This somewhat dissonant combination of suave eco-design and ingratiating cuteness still fails to prepare you for what is to come. Only from outside the center does the project's Ozlike expanse appear, fully spread. There, giant bubbles of improbable lightness, which appear to have seeped out of the old pit walls, preside serenely over a scene of hive-like activity: Little rubber-wheeled trains haul swarms of visitors in and out of the 200-foot-deep pit amidst colorful stripes of planting festooned with tents, flags, and artworks.

For all its amusement-park trappings, the Eden Project is a botanical garden with an agenda—to tell the story of how people rely on plants for the necessities and amenities of everyday life, and thereby to inspire a greater concern for the natural world. It was the brainchild of Tim Smit, a composer and record producer who figured out that the unique climate of Cornwall, lying in the warming embrace of the Gulf Stream at Britain's far southwest tip, could support a major botanical attraction. In the early 1990s, he turned an overgrown jungle on a neglected Cornwall estate into a successful garden attraction, The Lost Gardens of Heligan. Anyone who adds "lost" to the name of a garden clearly has a showman's instinct, and a Barnumesque spirit permeates the Eden Project. (The name, for that matter, combines a whiff of Ian Fleming with a Biblical-scale ambition.)

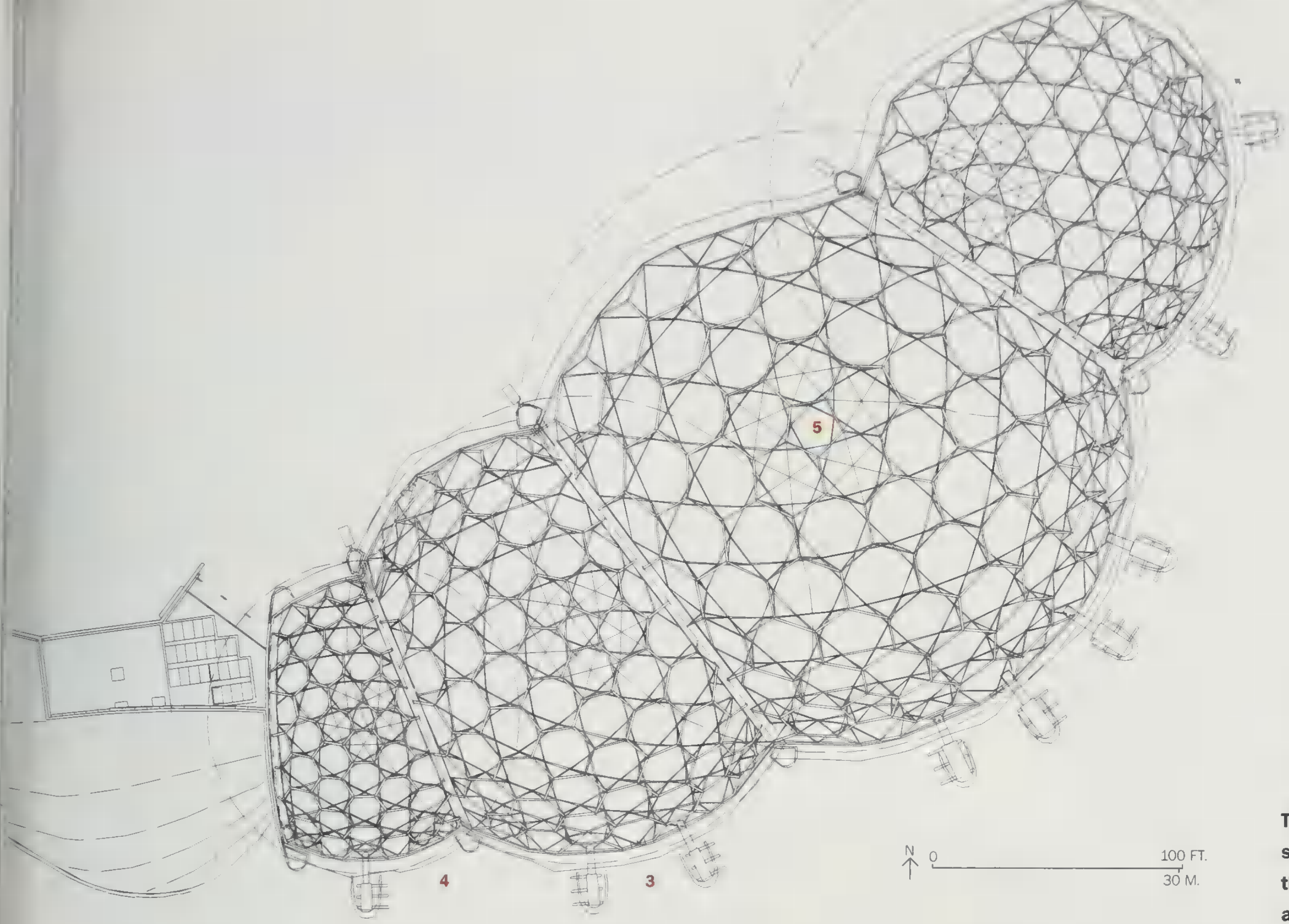
The visitor can't escape a relentlessly ingratiating tone, akin to that of a children's television show (as in, "a symbol of hope—in action").

Project: *The Eden Project, St. Austell, England*
Architect: *Nicholas Grimshaw & Partners—Andrew Whalley, AIA, Jolyon Brewis, David Kirkland, Michael Pawlyn, Perry Hooper, Bill Horgan*
Engineers: *Anthony Hunt Associates (structural); Arup (mechanical and facade); Land Use Consultants (landscape)*
Project manager: *Davis Langdon Management*
Contractor: *McAlpine Joint Venture*

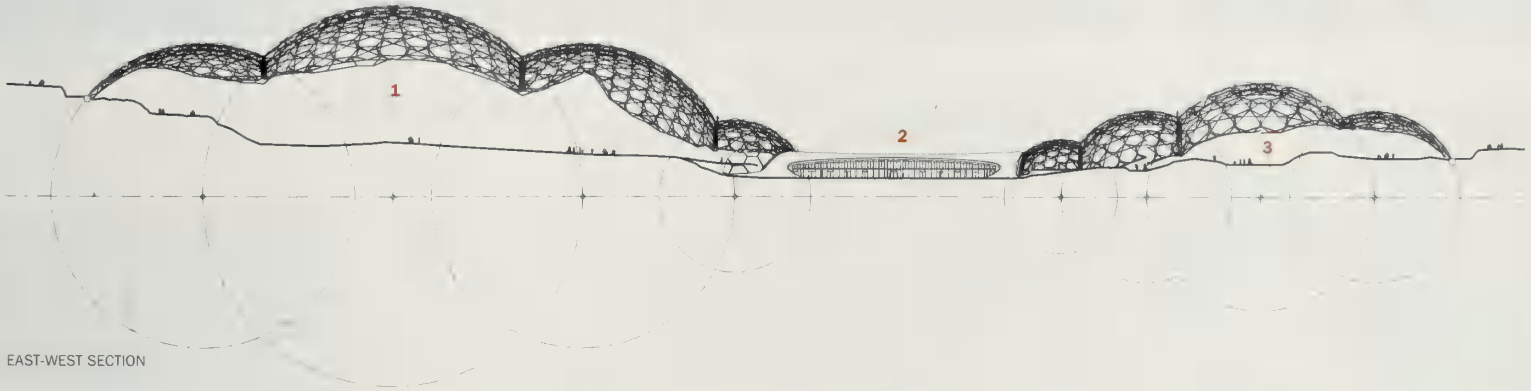


Landscaping tames the pit's raw topography. In the domes, Whalley explains, "You experience a continuously changing volume overhead as well as a continuously changing level underfoot."

1. *Humid tropical biome*
2. *Café*
3. *Temperate Mediterranean biome*
4. *Fan/heater*
5. *Roof vents*



The biomes hug the south side of the pit so that the quarry walls absorb solar heat, which is then drawn out in the cool of the night. Roof vents open automatically when the air within gets too hot.



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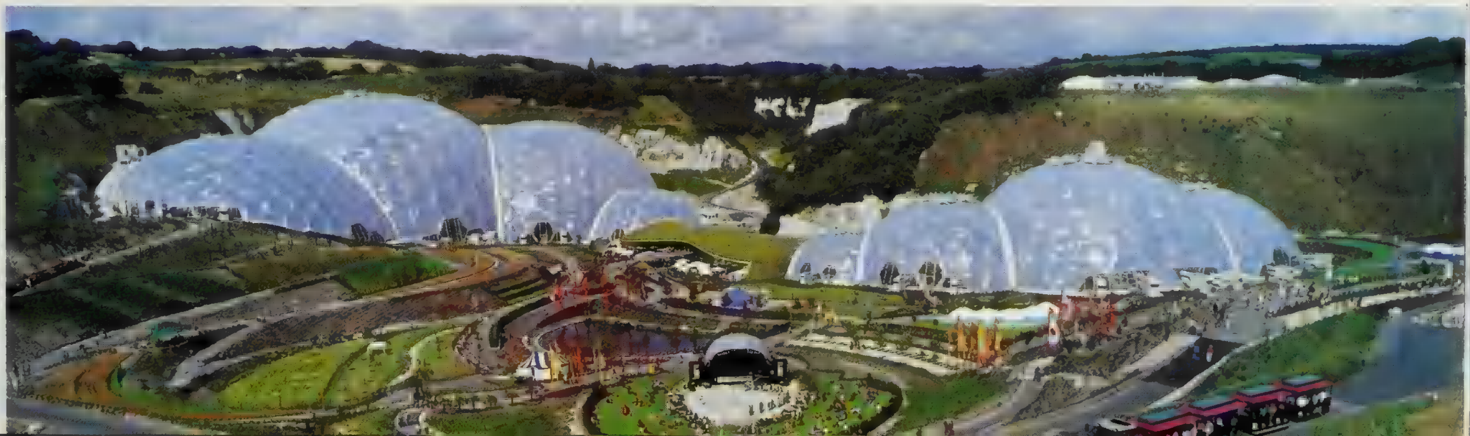

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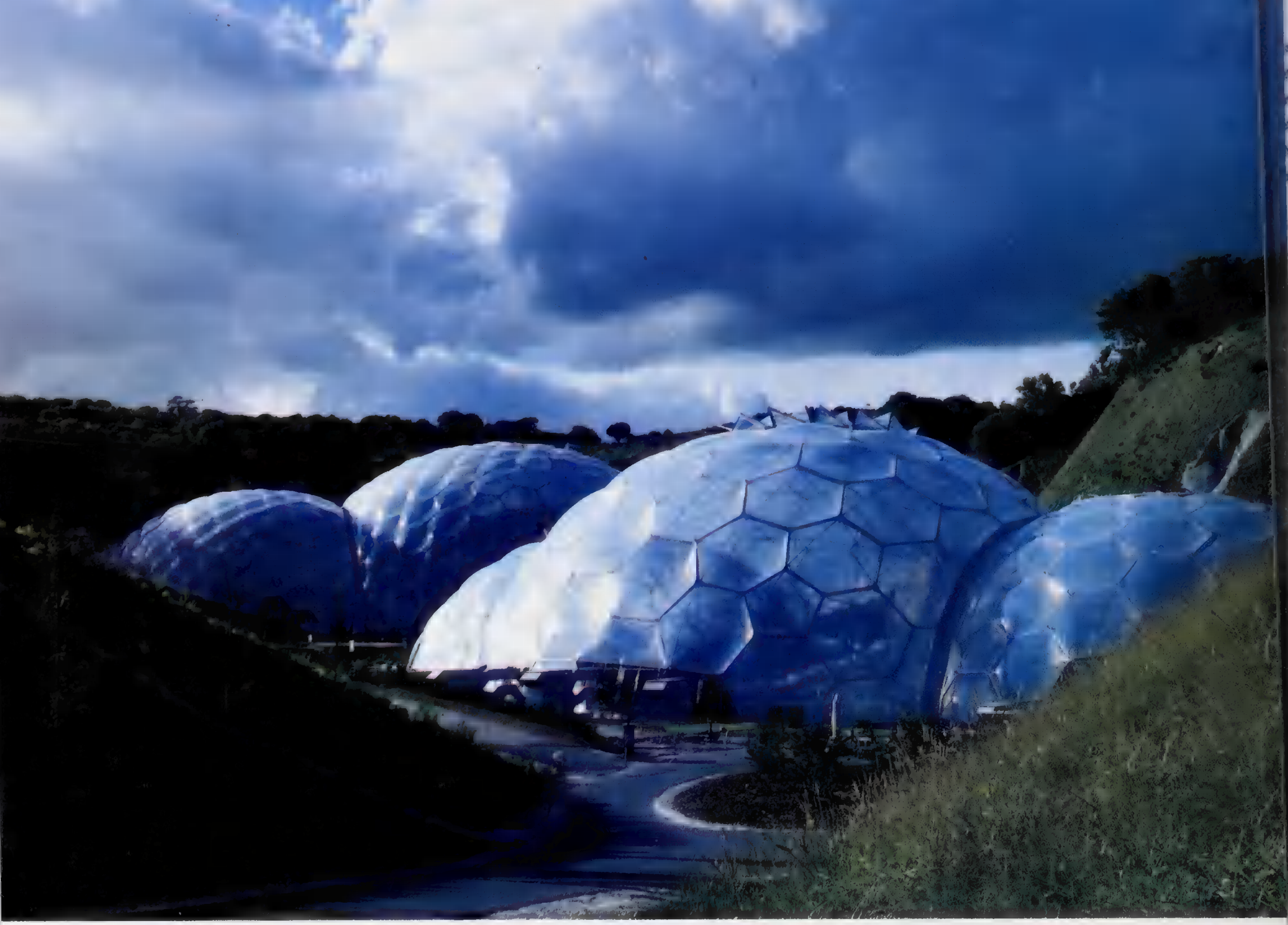


Even the sky's not the limit at the Eden Project

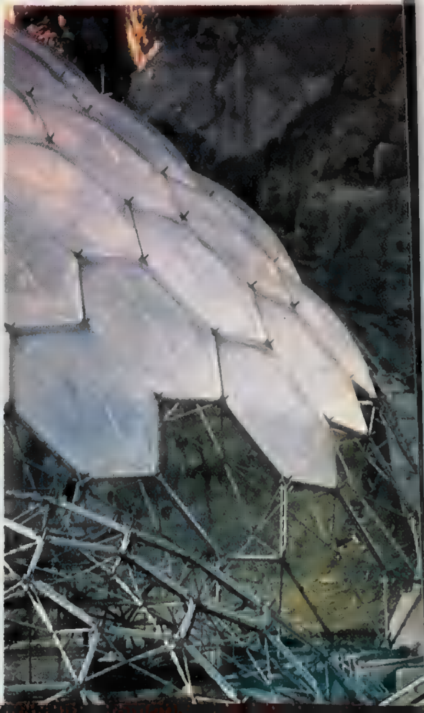
Buckminster Fuller would be impressed. At the Eden Project, several interlocking structures push geodesic dome technology beyond what Fuller could accomplish in his own time, but certainly not beyond what he could have imagined. At Eden, domes cover 323,000 square feet of tropical rain forest and can accommodate trees that soar to 160 feet in height, making the project the largest self-supporting structure in the world.

FOILTEC, headquartered in Germany with offices in the U.S. and London (www.foiltecna.com), engineered the domes using its unique Texlon Transparent Roof System of relatively thin tubular steel frames that are infilled with hexagonal-shaped pillows made of DYNEON ETFE (ethyltetrofluoroethylene) film. Although the domes appear too light and fragile for their function, FOILTEC designed them to withstand a wind suction load of 45 pounds per square foot and a snow load of 65 pounds per square foot.

The pillows are made from three layers of ETFE. The interior layer is .1 mm thick, and the middle and outer layers are .2 mm. ETFE has excellent chemical and electrical properties, superior resistance to abrasion and tear, and a seemingly indefinite life expectancy. Twenty years after it was introduced commercially, ETFE film shows no sign of decomposing from either air pollution or high levels of UV radiation.

Highly efficient thermal insulation is provided by air between the layers of foil, which is supplied by an external air handler. However, this system is not related to the structure. An interruption of air supply will affect the insulating properties but not the structural integrity. Unlike glass, ETFE film is self-cleaning. All exterior dirt is washed off by rainfall.

The Eden Project is an anomaly in size only. It's a glimpse into the future of space-making that Bucky Fuller dreamed of. *Sara Hart*



A sod-roofed café (right) linking the two biomes spills into the outdoor "biome." The pit shelters the domes from extremes of cold (opposite); the project hopes to replace gas-fired heaters with wood-fired ones fueled by Eden-grown biomass.

What's remarkable is how an architecture overtly expressive of technological prowess and industrial technology not only works with Smit's vision, it makes it work better.

Domes make dreams come true

The success of Smit's Heligan project convinced him that the region could support something much larger and more ambitious. He discovered the quarry near the village of St. Austell that would become Eden's site. In its eroded sides and lumpy bottom dotted with pools of fetid, standing water, he saw something "very bold and primal."

Smit assembled a team in 1995 to compete for government Millennium grants (proceeds from the national lottery), proposing a private, limited-profit company to run Eden. Envisioning a twenty-first-century version of the crystalline botanical halls at Kew Gardens, he chose Nicholas Grimshaw & Partners on the basis of the glass-and-metal bravura at Waterloo Station, in London [June 1994, page 90].

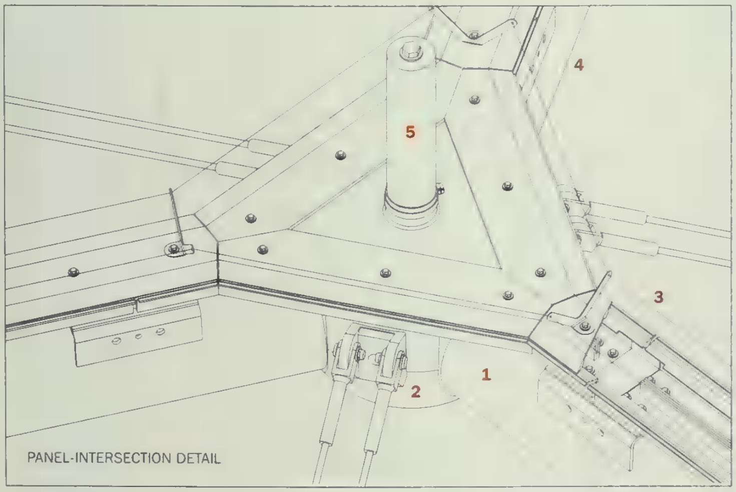
It took three applications and more than two years before the funding was assembled, but there was a silver lining: "The long funding process allowed more time to figure out the scheme," said Andrew Whalley, Grimshaw's partner in charge of the project. The firm had enormous expertise at its disposal thanks to the design/build arrangement adopted for the project. Eden united the contractor, McAlpine Joint Venture, and Grimshaw with Davis Langdon (a project management firm) and Anthony Hunt Associates, the structural engineers that had helped Grimshaw realize Waterloo.

Smit's original scheme envisioned three enclosed biomes, representing the tropics, the temperate Mediterranean, and the desert. Grimshaw's earliest proposal for the site simply adapted the undulating glass vault of Waterloo, with its spidery trusses, to the bumpy topography of the clay pit. But the large trusses would have been costly to fabricate, since each had unique span and end conditions and was difficult to transport. The scheme, says Whalley, "somehow seemed Victorian—that we hadn't really pushed the envelope."

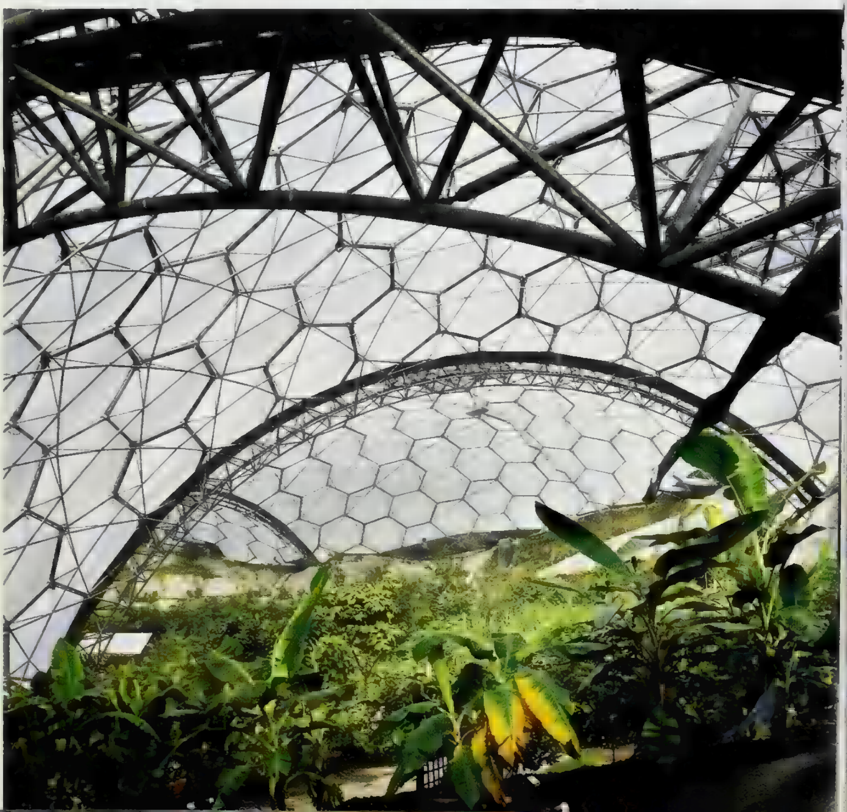
A STRUCTURE OF INTERLOCKING GEODESIC DOMES ADAPTED WELL TO THE UNDULATING TOPOGRAPHY.

In the meantime, ethyltetrafluoroethylene (ETFE) foil, with its

(OPPOSITE, BOTTOM): PETER COOK/VIEW (TOP)



1. *Glazing support tube*
2. *Connection node*
3. *Foil-pillow clamping system*
4. *Inflation tubes (not shown)*
5. *Fastening post (for maintenance work)*



Mero, a space-frame fabricator, suggested adding a layer of triangulated struts under the hexagonal panel's chords (temperate biome, opposite). This eased construction because the panels could be erected in sections and remain self-supporting. Unit heaters augment natural ventilation (below). Inside the tropical biome (bottom).

ideal transparency, thermal qualities, and ability to span large distances (page 96) seemed the glazing material of choice. "We asked ourselves how to devise a structure that was true to the properties of this material," explained Whalley, deciding to define the geometry "as a series of interlocking spheres." A geodesic structure did not require a flat base, so the panels could be sliced where they met grade to allow the dome to clamber up and over ground irregularities. The interlocking of the domes provided additional strength.

The team found other ways to innovate. Topsoil for planting was manufactured on-site from excavated soils and other waste. The water that perpetually seeps from surrounding land into the pit is recycled for irrigation.

That's edutainment?

The spectacle of the domes in construction drew crowds long before the first shrub was planted, creating enormous anticipation. The domes are undeniably spectacular—worth gawking at. In such large structures, the architect and engineers have teased out the simple delight of soap bubbles. And yet there's nothing ingratiating or prettified about the matte-gray struts or the plasticlike ETFE skin. Whalley cannot explain the architecture's extraordinary appeal except in the problem-solving methodology the firm professes. "We're motivated by the issues that face us, rather than an aesthetic idea or visual philosophy," he says.

The domes evoke as well the guilty pleasure of a cheap sci-fi movie: You tend to look over your shoulder to see if they've multiplied since you last looked—which they will. Work is underway on the third biome and an education center, thanks to crowds that topped 1.5 million in the first eight months, double the 750,000 projected for the entire first year. Not even the terror attacks of autumn or the sinking economy have dampened enthusiasm.

> **AS IN A SCI-FI MOVIE, YOU TEND TO LOOK OVER YOUR SHOULDER TO SEE IF THE DOMES ARE MULTIPLYING. THEY WILL.**

But Smit has work to do. Recognizing that the plants have yet to mature and that Eden has been handling very large crowds, the visitor experience, disappointingly, lacks both a guiding exhibition aesthetic and a clear educational vision. For example, Smit's horticulture and museum-display teams installed sprayed-cement watercourses that neither recognize their own artificiality nor do much to imitate the real thing. Bamboo-pole handrails and "petroglyphs" scribed in a Gunite "cliff" evoke gift-shop ethnography. Educational information was relatively skimpy during a visit last August; it was comprised primarily of such stage-set tricks as a ship's prow that opens to reveal the products the jungle offers us.

It's clear that Smit's gutsiness and marketing savvy have made possible the kind of visitor magnet Cornwall's stumbling economy has long needed. The cutesy edutainment now on offer will pale quickly, however. His interpretive team will probably have to aim higher, aspiring to the state of the art represented by the best museums, zoos, and botanical gardens. Luckily, he's got a work of architecture that shows the way. ■

Sources
Biome structure: *Mero*
ETFE: *Foiltec/Vector Special Projects*
Architectural glass: *SCS; Allan Roofing (roof glazing)*
Roofs: *Asphaltic Company; Douglas Flat Roofing (green roof); Clyde Canvas (tents); Prater Roofing (standing seam)*
Rammed earth wall: *Insitu*

WWW For more information on the people and products involved in this project, go to Projects at **www.architecturalrecord.com**

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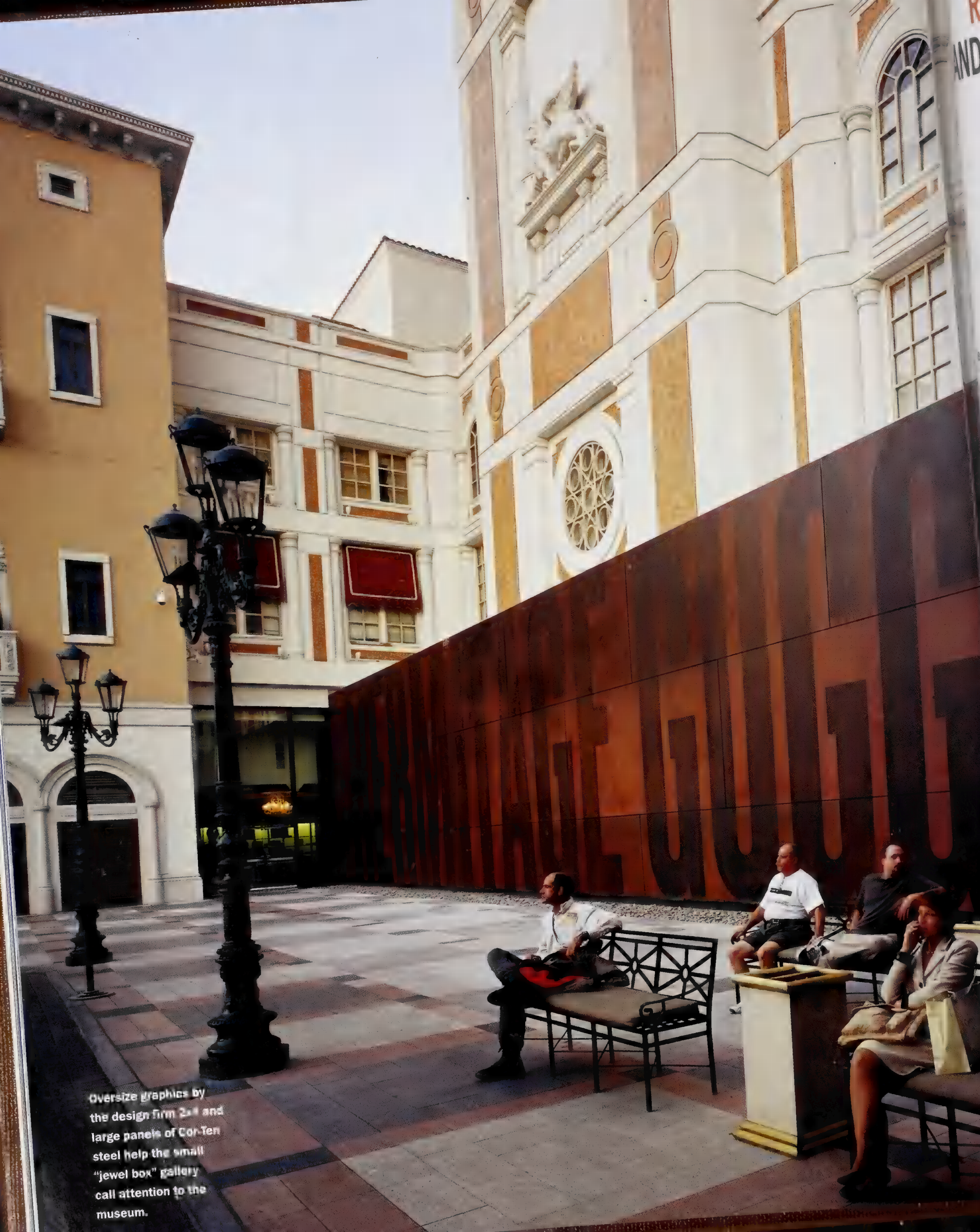
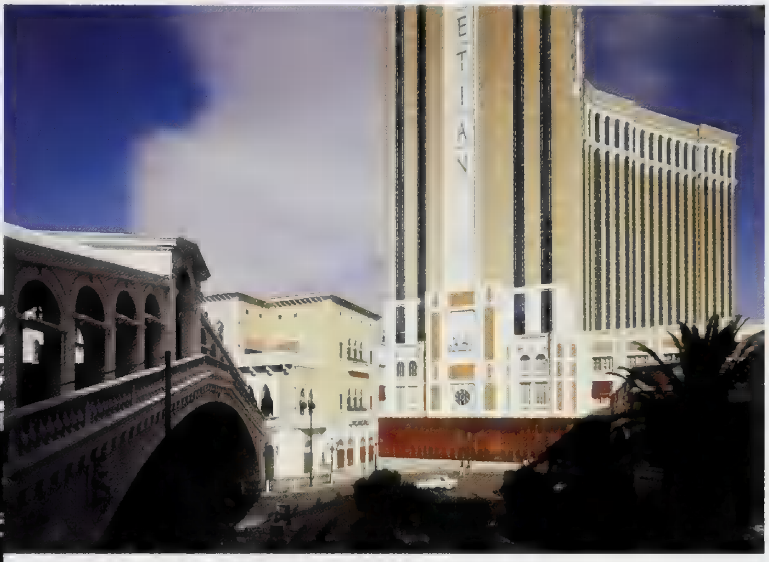
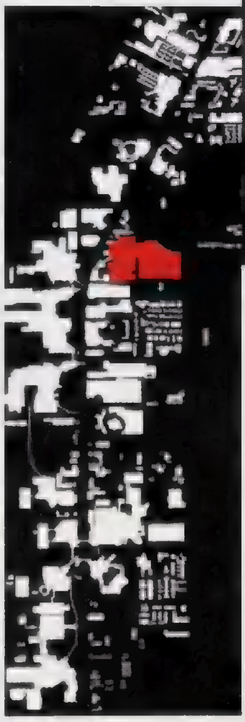


Oversize graphics by the design firm 2x4 and large panels of Cor-Ten steel help the small "jewel box" gallery call attention to the museum.

Rem Koolhaas plugs the GUGGENHEIM AND HERMITAGE MUSEUMS into the high-voltage setting of the Las Vegas strip

By Clifford A. Pearson





Although the Venetian stands on Las Vegas Boulevard (above), the Rialto Bridge blocks most drivers' view of the Guggenheim (top right).

Rem Koolhaas loves to mix it up. His put-up-your-dukes writings and polymorphous architecture invite confrontation—in both the positive and negative sense of the word. He wants you to argue with him. He revels in juxtaposition and crossed paths. Since publishing his first book, *Delirious New York*, in 1978, he has extolled the virtues of high density and recombinant urban patterns. For Koolhaas, architecture is a contact sport.

Las Vegas would seem to be an ideal place for him to work. Where else can you stroll from a giant glass pyramid to an exploding volcano, watch pirates battle a British frigate every half hour, and drop a few grand at the roulette wheel or an Armani boutique? If Koolhaas is going to talk about the joys of crazy-quilt places, let's see if he can design for a city where New York New York is down the block from Paris Las Vegas and Mandalay Bay.

His test has come with a pair of exhibition spaces for the Guggenheim Museum that opened in October. Inserted within the mock-historic fabric of the Venetian—a two-year-old, themed-to-the-nines casino hotel encrusted with faux-Renaissance murals, cast-gypsum pilasters, and urethane-coated-foam cornices and capitals—the two art halls directly engage the twin worlds of theming and entertainment architecture. No discreet separation or polite distance was possible here: High culture meets low-brow America head-on.

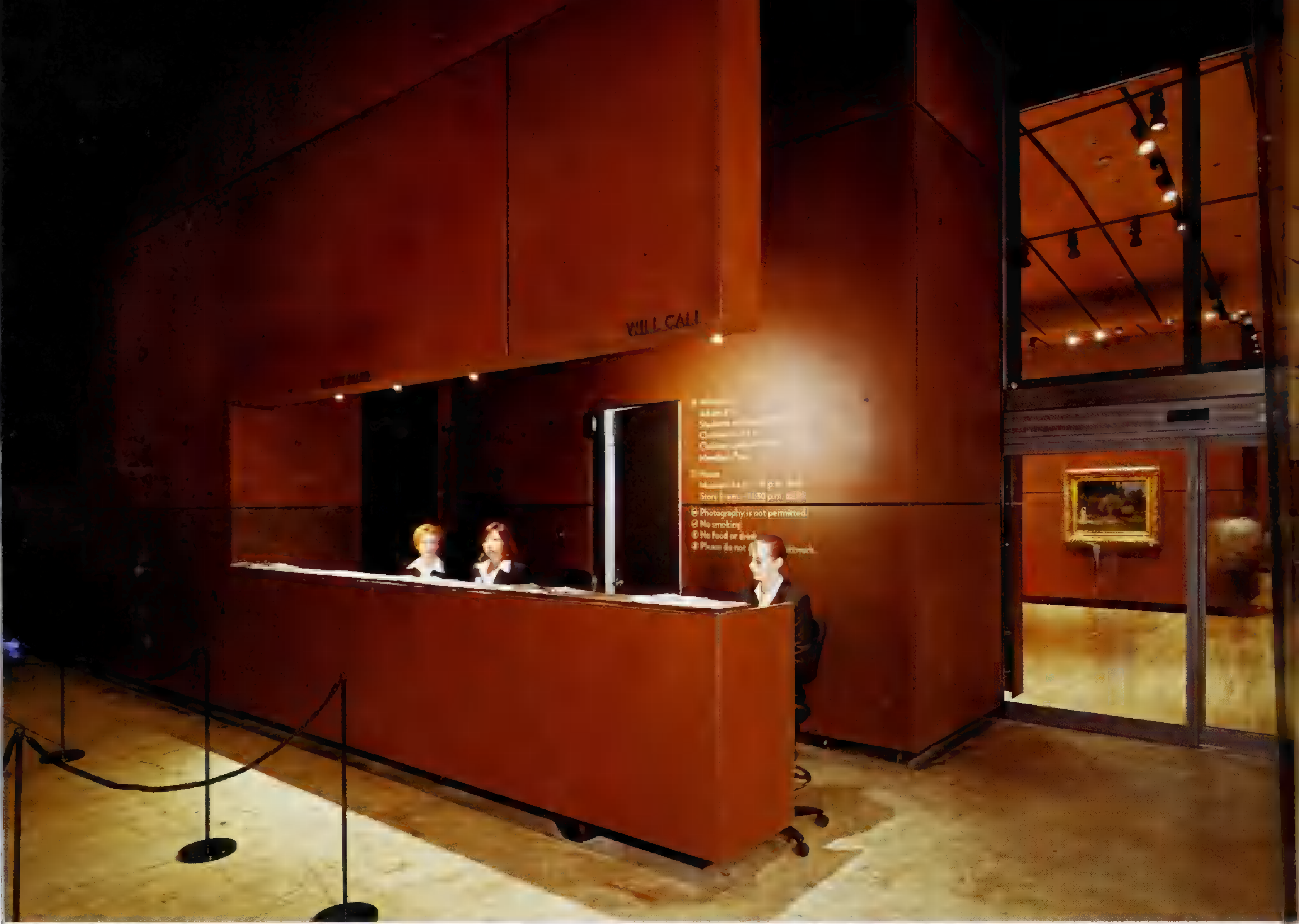
Koolhaas could have addressed this mixed context with a wink and a nudge, ironically alerting the cognoscenti not to take it all too seriously. To his credit, he refused the sly way out. Instead of condescending to the neo-Italian surroundings, he treated them no less seriously than the cast-iron buildings in New York's SoHo district, where he recently designed a Prada store. To Koolhaas, Vegas is no less "real" than those now-beloved SoHo buildings, which also imitate historical styles and were once widely criticized for doing so in cheap and inappropriate materials. "Vegas isn't fake. It has schools, firehouses, citizens," he replies when asked about authenticity in a town that boasts museums to Liberace and Elvis.

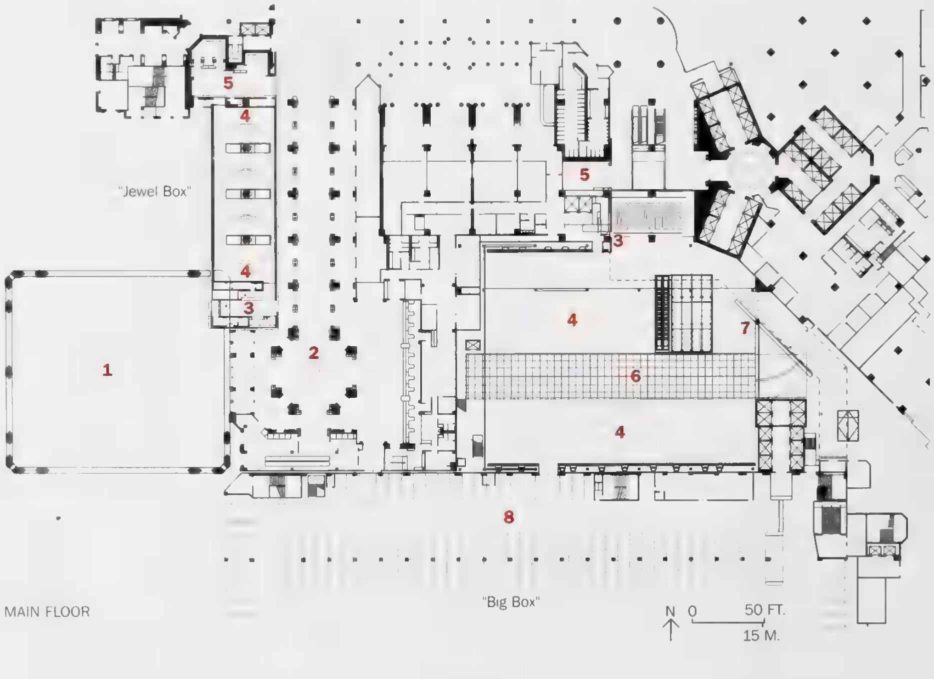
Although designed and built at the same time and attached to the same casino hotel, the two art spaces posed different sets of challenges. The smaller but more visible component is the Hermitage Guggenheim, a joint venture with the State Hermitage Museum of St. Petersburg, Russia. Grafted onto the front of the hotel and nicknamed "the jewel box," the 7,660-square-foot Hermitage Guggenheim had to negotiate a radical shift in scale and style from the 3,036-room, $1.6 billion Venetian complex to those of a small art gallery. Meanwhile, its big sister, the 63,700-square-foot Guggenheim Las Vegas, hides behind the hotel and must establish its own identity without having any public outdoor presence. Called the "big box," this 70-foot-tall space is currently playing host to *The Art of the Motorcycle*, the popular show that opened at the original Guggenheim in New York in 1998. Both installations—in New York and Vegas—were by Frank Gehry.

As their nicknames tell us, both of the Guggenheims in Vegas are essentially boxes. Neither is a tour-de-force of architectural invention—not surprising, considering they were designed and built in just 14

Project: *Guggenheim Las Vegas, Exhibition Hall and Hermitage Guggenheim Gallery*
Clients: *Venetian Casino Resort—James Beyer, AIA, vice president of design; Guggenheim Museum—Thomas Krens, director*
Design architect: *Office for Metropolitan Architecture—Rem Koolhaas, principal; Joshua Ramus, Christian Bandi, project team*
Architect of record: *TSA of Nevada—W. Easley Hamner, FAIA, principal; Christopher Leary, AIA, Kriss Pettersen, AIA, Mark Zwagerman, AIA, Dan Thomas, Brad Bartholomew, David Curtis*
General contractor: *Taylor Int'l.*

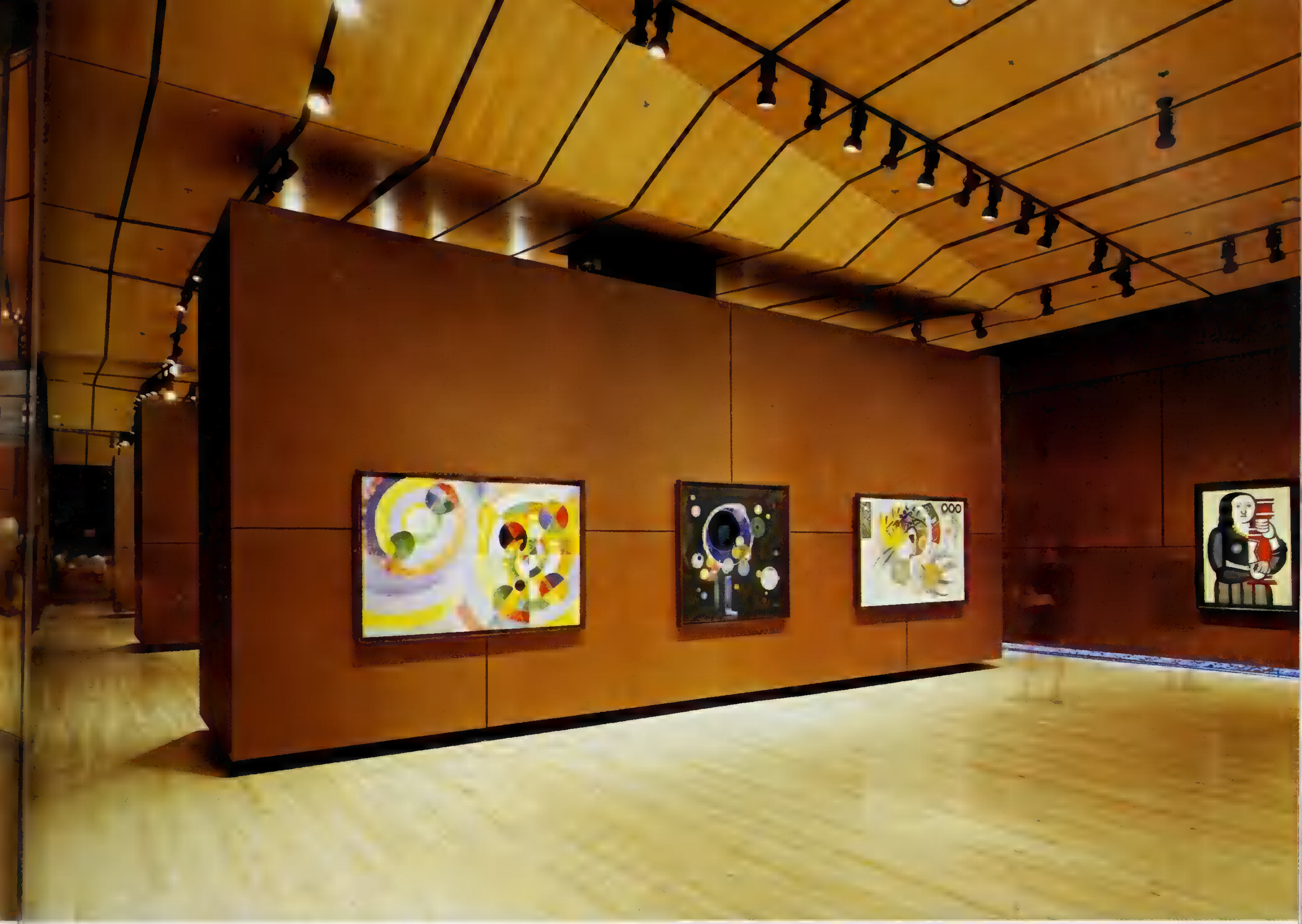
PHOTOGRAPHY: © LARA SWIMMER/ESTO

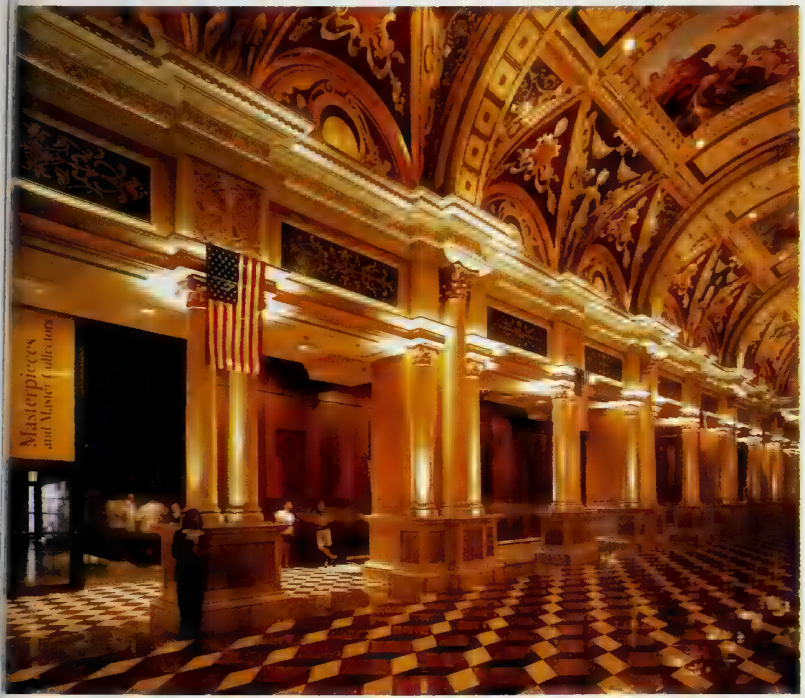




Visitors enter the HermitageGuggenheim from a barrel-vaulted corridor in the Venetian hotel (opposite, bottom). Six-inch strips of glazing above and below the perimeter walls let daylight slide inside the gallery (above and opposite, top) and offer narrow glimpses of a pebble border outside and the Venetian's grand luxe. Admission to the museum is $15.

1. *Hotel porte-cochère*
2. *Hotel lobby*
3. *Museum reception*
4. *Gallery*
5. *Museum shop*
6. *Trench*
7. *"Mega-door"*
8. *Garage*



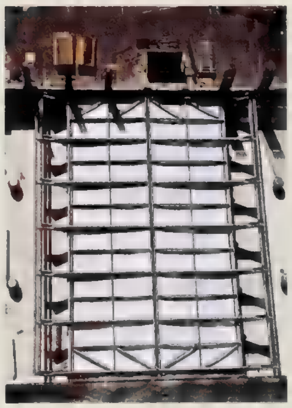


months. Instead of flash, they provide sensible solutions to sticky questions of scale, identity, and context. Comparing the Vegas projects with the one in Bilbao, Thomas Krens, director of the Guggenheim, says he purposely took an opposite approach. "Bilbao was a gritty, industrial city, so we needed an exuberant building. In Vegas, which was already exuberant, we wanted an industrial building."

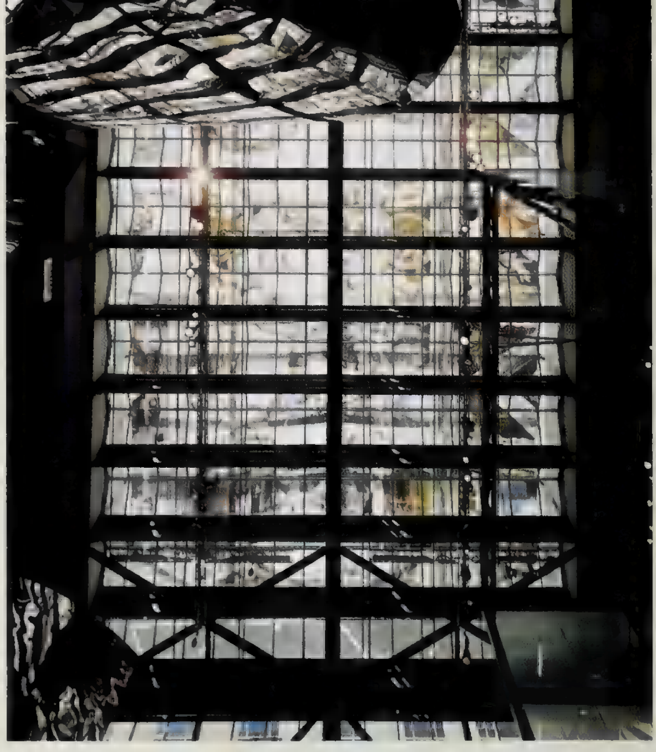
Koolhaas's strategy in Vegas was straightforward—simply apply a new layer of architecture onto an existing canvas and let the differences become part of the story. By using Cor-Ten steel for the Hermitage Guggenheim (both inside and out) and shaping the museum as a sturdy rectangle, the architect gives it the presence to stand up to the hulking Venetian hotel without having to scream for attention. Narrow strips of glass above and below the Cor-Ten walls set both the exterior and interior facades afloat, gently separating the museum from its glitzier host. "We built a strongbox of Cor-Ten, so the museum retains its autonomy and the art retains its aura," explains Koolhaas.

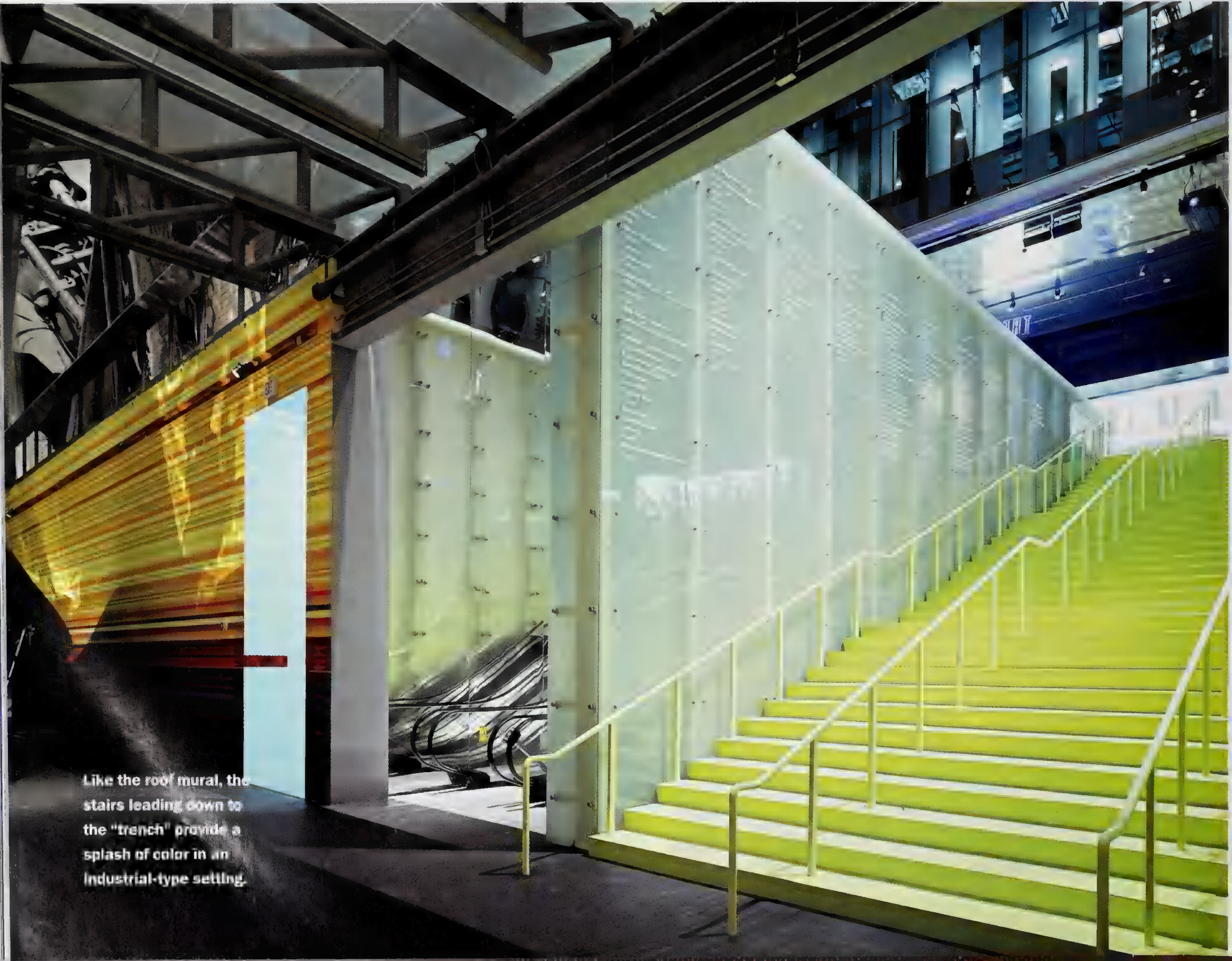
Treated with chemicals to speed up the rusting process and then finished with a clear sealer to prevent any rust flakes from affecting the artwork, the Cor-Ten has the look of rich leather. For such a hard-edge material, the steel here seems remarkably soft, giving the museum's interiors the feeling of a luxuriously padded box. Inspired by the velvet-covered walls on which paintings are hung at the Hermitage in St.

THROUGH THE ROOF

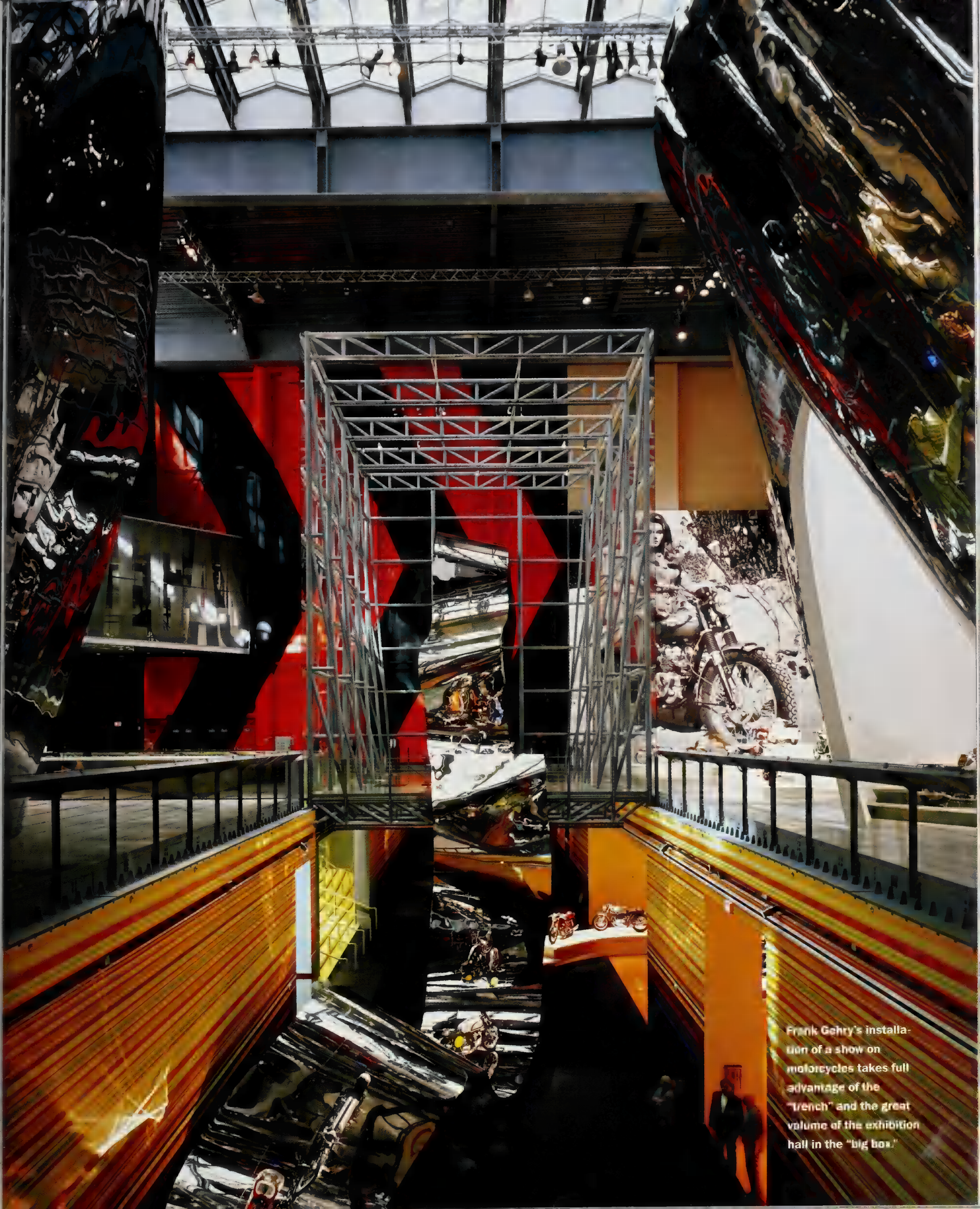


Koolhaas originally wanted the roof of the Guggenheim's "big box" to open and expose the museum directly to the sky. Concerns over cooling the large space and protecting artwork inside, however, killed the idea. So the architects designed a fixed skylight and clerestory glazing to maintain a climate-controlled environment. But the roof does open—with hydraulic lifts moving a pair of 125-foot-long, 36-foot-wide flaps from a horizontal position to 10 degrees beyond vertical. Although not installed at the time the museum opened in October 2001, metal panels imprinted with an image of the Sistine Chapel ceiling will be attached to the roof. Until the metal panels are in place, a fabric screen reproduction of the Michelangelo painting serves as a substitute (right). Since the exhibition hall has no outdoor entrance and little presence from the outside, Koolhaas treated the roof as its public facade visible from hundreds of hotel rooms (above). Putting it in motion helps it grab attention.





Like the roof mural, the stairs leading down to the "trench" provide a splash of color in an industrial-type setting.



Frank Gehry's installation of a show on motorcycles takes full advantage of the "trench" and the great volume of the exhibition hall in the "big box."

Tucked behind the casino floor, the entry to the Guggenheim Las Vegas (left) announces a radical shift in style. In the gallery spaces (above), an industrial aesthetic keeps the feeling informal.

Petersburg, Koolhaas helped develop an innovative system of powerful magnets that hold Picassos, Cézannes, and Renoirs in place directly on the richly hued metal walls.

The architects also proved to be imaginative working with the existing building's giant structural members, turning three 4-foot-square columns into masts from which Cor-Ten partitions are hung like giant metal sails. Indeed, the three partitions can each rotate 90 degrees to change the spatial configuration of the gallery.

While the Hermitage Guggenheim provides an intimate setting for paintings and sculpture, the Guggenheim Las Vegas offers a grandly scaled space (210 feet long, 160 feet wide, and 70 feet high) for displaying large contemporary art (think Serra or Whiteread or Twombly). A steel-frame structure set between the hotel and a 9-story parking garage, the "big box" features a few movable parts: a crane that runs along a steel roof beam and can hoist a 35-ton sculpture, a 70-foot-by-70-foot "mega-door" that pivots open, and a pair of metal roof panels 125 feet long and 36 feet wide that will be printed with a facsimile of the Sistine Chapel ceiling and can adjust the amount of daylight above a fixed skylight. (When the museum opened in October, the panels hadn't been imprinted yet, so a fabric scrim with the image was used as a temporary device.)

Slicing through the middle of the gallery's main floor is a 210-foot-by-30-foot "trench" that serves as a lower level for displaying art. Metal grates and glass floor panels can cover all or part of the trench to add floor space to the main level while retaining views to below. Koolhaas used concrete floors, gray steel, and mirrored surfaces to establish a neutral backdrop for displaying art, but injected a few moments of color: a lime-green stair down to the trench, a mustard-yellow gallery off the trench, and orange-and-black chevrons on the mega-door. The result is a giant container for art, a brash kind of place where there's no need to worry about keeping your voice down or being dressed properly.

"In the past, entertainment had no need for architecture and architecture had no desire to entertain," says Koolhaas. Referring to the two Guggenheims in Las Vegas, he states, "An entirely new architecture has been generated here. It's high and low. It creates a continuous field where separations are no longer necessary or possible." Okay, he overstates his case. The project may not really break new ground architecturally, but it has the right amount of swagger and elan to feel just right for Vegas. And not many star architects could pull that off. ■

Sources

Structural steel (for "big box"): *SME Steel Fabricators*

Operable roof shutter components: *Hamilton Engineering*

Clerestory glass: *Medco*

Skylight glass: *Alpen*

Acoustical ceilings: *Ceilings Plus*

Structural steel and Cor-Ten panels (for "jewel box"): *Vegas Steel*

Rotating wall mechanism: *Ederer*

Cor-Ten finishing: *Mark Quinlan and Zahner Architectural Metals*

Wood ceilings, floors, cabinets: *Northwestern Architectural Woodwork*

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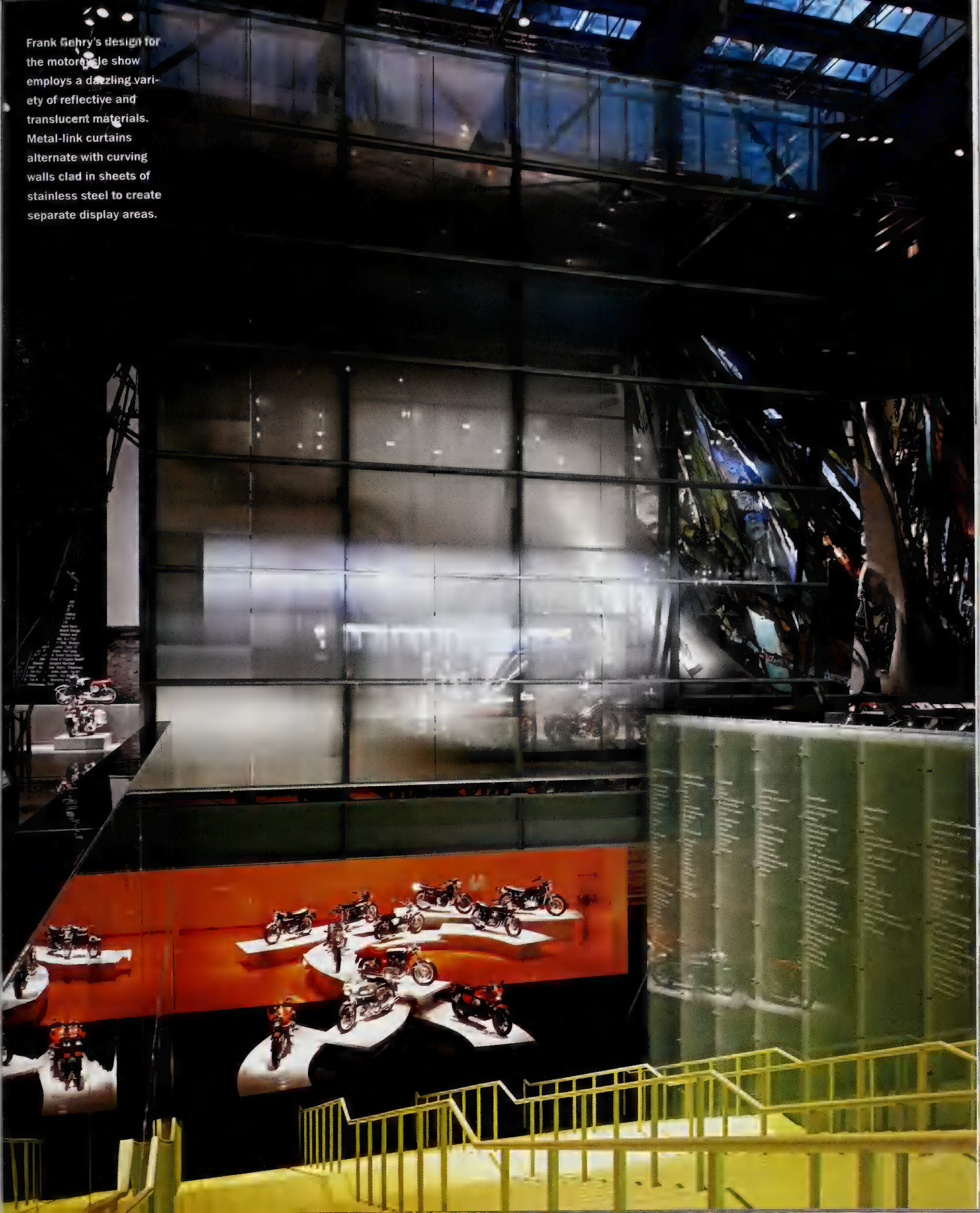
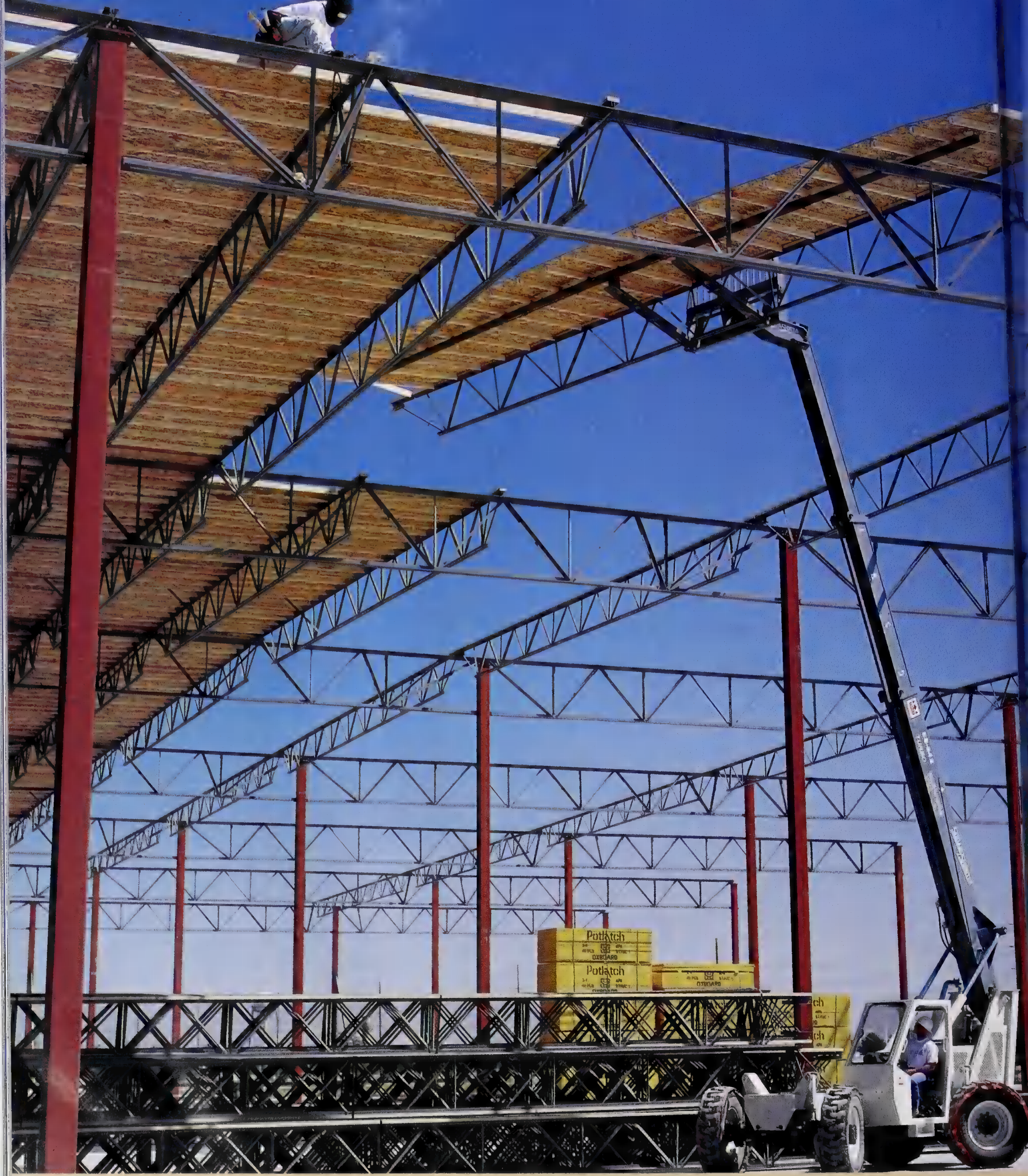


Frank Gehry's design for the motorcycle show employs a dazzling variety of reflective and translucent materials. Metal-link curtains alternate with curving walls clad in sheets of stainless steel to create separate display areas.



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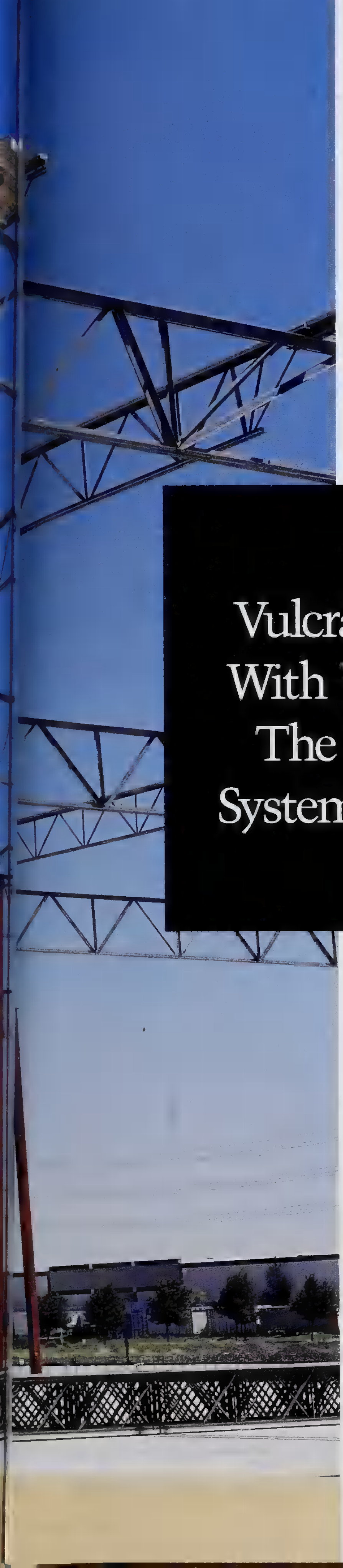

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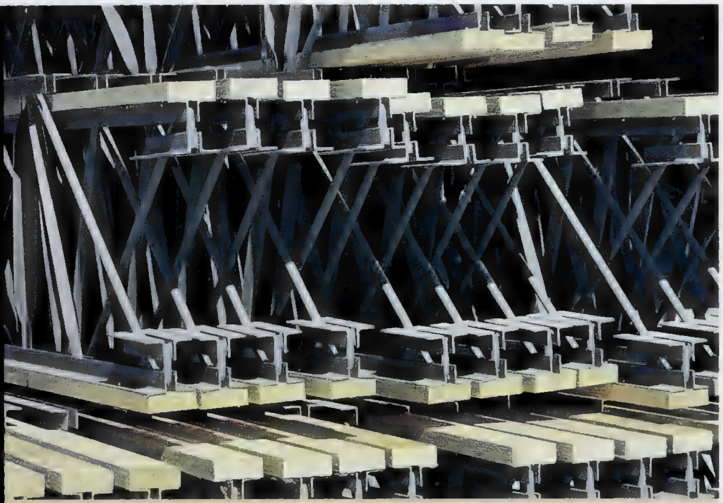

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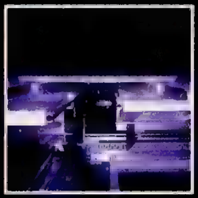

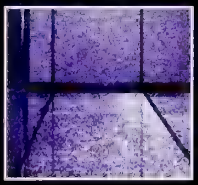

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1.

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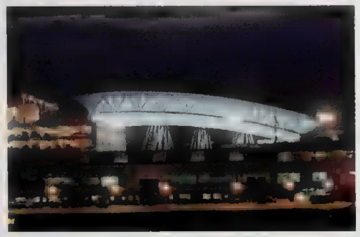
Skidmore Owings & Merrill's Terminal 4 anticipates evolving security concerns in an architectural environment of reassurance.

2.

Frankfurt, Germany

Bothe Richter Tehrani gives space-age form to a roadway-straddling, high-speed, air-to-rail station.



3.

Portland, Oregon

Zimmer Gunsul Frasca's glass-covered departure-curb canopy welcomes passengers to an expanded Portland International Airport.

PHOTOGRAPHY: © JEFF GOLDBERG/ESTO (1); JÖRG HEMPEL (2); TIMOTHY HURSLEY (3)

By James S. Russell, AIA

When travel plunged after last September's terror attacks, the government pledged billions in loan guarantees, but these may not be enough to bail out airlines that were already suffering from slackening demand. Air travel's savior, ironically, may prove to be an old competitor—passenger rail.

With fewer flights and longer and more invasive security procedures, short-haul flights have lost a considerable amount of their appeal, especially for business travelers hoping for one-day turnarounds for meetings or conferences. Suddenly, networking major airports with rail service between major cities, especially if it can reach speeds comparable to the best French, German, and Japanese trains, has moved much higher on the agenda of airport authorities, politicians, and even airlines.

Skeptics tend to describe rail as a nineteenth-century technology that has little to offer the personal-mobility-obsessed twenty-first. But new technology is transforming train and track design, making it possible to move trains faster on existing rights of way, while attaining record speeds in dedicated corridors with emerging traction technologies like magnetic levitation.

While a few lovingly restored golden-age gems still serve intercity rail passengers, Amtrak often delivers passengers to humble prefab huts in forsaken parts of town. Outside the U.S., where high-speed trains and multimodal transportation options are better established, architects and engineers are collaborating on spectacularly innovative multimodal centers. The diaphanous glass enclosure designed by Paul Andreu at Paris's Charles de Gaulle [RECORD, January 1996, page 76] anticipated Bothe Richter Tehrani's bubbled high-speed rail station at Frankfurt Airport (page 120). Santiago Calatrava gave romantically winglike form to Satolas Station, the high-speed airport rail station near Lyon [RECORD, July 2000, page 85].

Commuter-rail access is becoming more common in America, however: Chicago (O'Hare); San Francisco; Atlanta; Washington; Philadelphia; Cleveland; and Portland, Oregon, have, or are planning, local rail connections. But cities elsewhere tend to make more of them in terms of design, and to exploit their potential in terms of economic development. In projects like the 15-minute Heathrow Express to Paddington Station or the 45-minute Stansted Express to Oxford Street Station—both serving London—the airport rail stations offer an impressive and easy-to-navigate welcome, while their in-town destinations augment conventional visitor services with retail, commercial, and entertainment venues intended to revitalize once-dreary precincts. Hiroshi Hara's Kyoto Station (1997), a dizzying, multilevel circus of space frames and escala-

For additional transportation projects, go to Building Types Study at *architecturalrecord.com*. The monthly expanded Web BTS features project descriptions, photographs, drawings, statistics, and links to people and products.

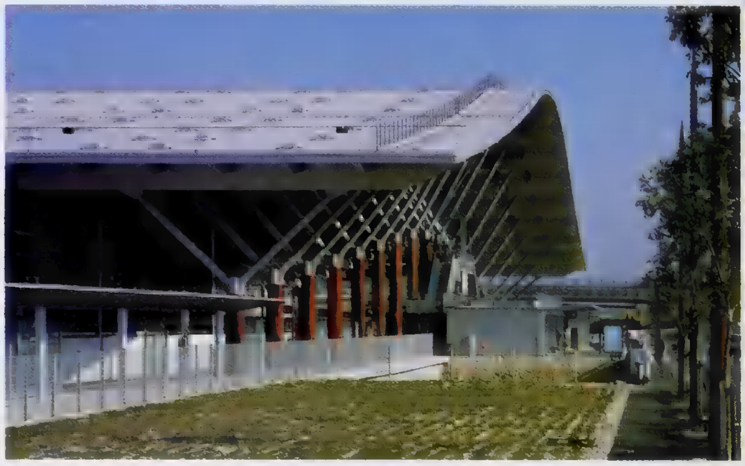
tors, is now that city's largest commercial development. Offices and retail make up a large part of Von Gerkan Marg & Partners's megastation rising in Berlin. Developers have spotted the potential of Skidmore, Owings & Merrill's plans to revitalize New York's Penn Station [RECORD, March 2000, page 68] and intend to erect up to 20 million square feet of offices, hotels, and sports facilities nearby. (These and many other projects can be viewed at *Modern Trains and Splendid Stations*, an exhibition at the Art Institute of Chicago, through July, or in the catalog by Martha Thorne.)

Unclogging airports

Here's why the outlook for intercity rail is brightening in the U.S.: If you have to arrive two hours ahead of your hour-long flight's departure, and then drive for half an hour or so on either end, suddenly Amtrak's fastest trains become time competitive, and fares can be lower because trains are cheaper to run.

But there are other reasons that airports nationwide are connecting themselves to rail. "Getting people to the airport is the number one design issue," says Robert Davidson, the chief architect at the Port Authority of New York and New Jersey. He was speaking not just of the general urban traffic congestion that strangles cities and airports everywhere, but the curbside congestion generated by passenger drop-offs (see Portland's solution, page 124), and the huge sums airports spend on parking and parking structures. The Authority runs the New York area's three major airports and has just opened a station that links Newark Airport's three terminals by monorail to the northeast rail corridor that serves both long-distance travelers and commuters (opposite).

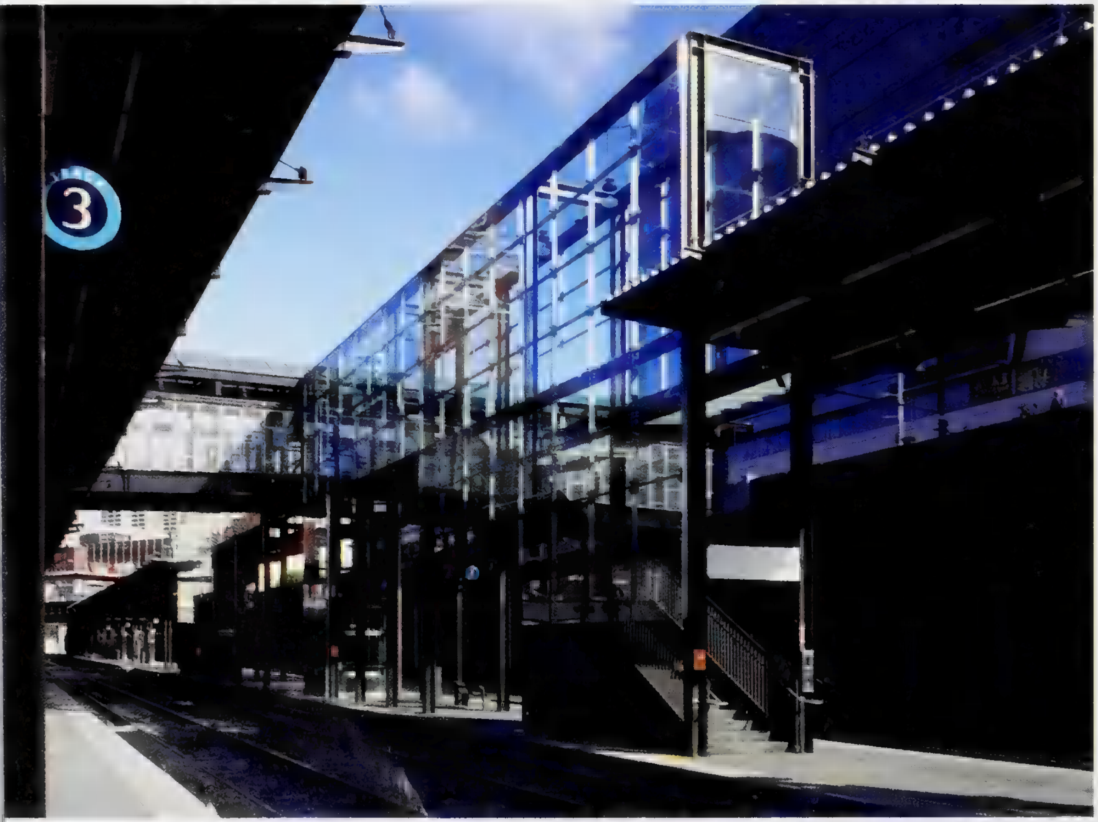
According to Matthew Coogan, a transportation consultant in White River Junction, Vermont, who has made airport access a specialty, "Zurich is increasing airside gate capacity by about 50 percent, but they are not increasing curb capacity at all." The growth in passengers will be entirely taken up by a vast underground train station designed by Nicholas Grimshaw & Partners.



French railway's SNCF architects designed the Arbois TGV Station as a low-lying gateway to the Aix-en-Provence region.

But rail-to-air connections also looked promising before September 11 because replacing takeoffs and landings at overcrowded airports with train service can be much less expensive for airports and airlines alike. For airlines, short-haul flights are hard on airplanes and often unprofitable. So Continental Airlines now supplies passengers from Amtrak's northeast corridor—Philadelphia, for instance, 80 miles south—to its long-haul Newark flights. "Relying more on rail for close-proximity flying frees up slots for the long-haul flights that customers demand," explains David Kinzelman, who is director of alliances at Continental Airlines. In 2003, city and suburban commuters on the Long Island Railroad will be able to reach traffic-strangled JFK Airport through a new AirTrain connection—already built into the new Terminal 4 (page 114).

Right now, Newark is the only American airport to have direct intercity and commuter-rail access, but Baltimore-Washington has long had a van connection to Amtrak's northeast corridor. It will probably be upgraded with a new light-rail connection. T.F. Greene, in Providence, is also working with Amtrak on a rail-to-air stop that could help make it Boston's second airport. Similarly, Milwaukee seeks to become the long-dreamed-of third "Chicago" airport via Amtrak. Other candidate cities for intercity and local commuter rail include Burbank, California; Miami and Orlando, Florida; and Seattle. "It absolutely makes sense to replace as much of the short-haul air movement with the efficiency of rail," says Coogan. He says the terror attacks of September 11, which shut airports nationwide for three days, showed how little redundancy the nation's transportation system has. "A project like Newark gives passengers more options," he says. "You put yourself in a better position to deal with uncertainty and unplanned events," including weather delays or traffic-control snafus.



Light-filled glazed stairways and new platform roofs, designed by Otak, greet commuters on the Puget Sound region's new commuter-rail system at Seattle's King Street Station, which is shared with Amtrak.

How fast? How far?

Many analysts see air-rail connections as an untapped market that makes high-speed rail a dream that should no longer be deferred in America. "Intercity rail, if fully embraced and

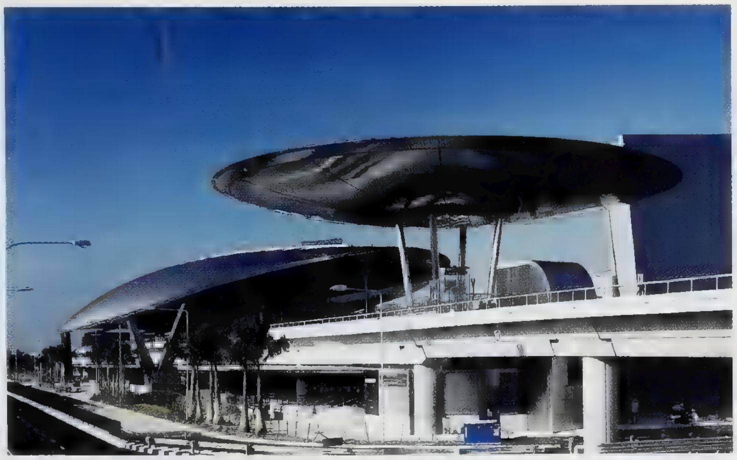
PHOTOGRAPHY: © VIEW/PAUL RAFTERY (TOP); ART GRICE (BOTTOM) developed, will be effective in reducing airway and highway congestion, especially if it focuses on the development of markets from 300 to 600 miles apart," says Warren Flateau, a spokesman for the Federal Railroad Administration. He says 40 percent of all air trips fall in this category. The competitiveness of rail depends not just on top speed, but whether equipment can travel at high speed over a long distance. The 125 mph sustained speeds on Amtrak's popular 230-mile New York-to-Washington service are the fastest in the nation, but they are competitive with air only because roadways and airports are so congested and air-shuttle service (halved since September 11) is so costly. Cities much more than 300 miles apart can't be thought viable, say experts, without the best Japanese or French rail technology now available, allowing speeds of from 150 to nearly 200 mph.

Travelers using New Jersey Transit or Amtrak can access Newark International Airport's three terminals via monorail at this new station designed by the Port Authority of New York and New Jersey.

The ideal candidates are large metropolitan areas, at least one of which has a major hub airport, and a few other high-volume corridors. Suggested city pairs include Los Angeles to San Diego and Las Vegas; Chicago to Detroit; Detroit to Indianapolis, Cleveland, Columbus, Ohio, and Pittsburgh; Dallas/Fort Worth to Houston; Seattle to Portland, Oregon; St. Louis to Kansas City, Missouri; Orlando to Tampa and Miami, Florida.

Smaller cities along these trunk corridors, many of which suffer from poor air connections, could also benefit. Coogan says he's advised Continental to solicit Newark business by rail from Bridgeport and Stamford—two of the largest Connecticut cities that must otherwise access airports via dozens of miles of congested I-95.

But there are a number of reasons that air-to-rail integration has been slow. American government policy treats each travel mode differently, subsidizes each in different ways, and lacks an overarching strategy about what each mode should do or how they should work together. In most countries, moving people from planes and cars to rail is an explicit policy, supported by subsidy allocations. But most rails in America are in private hands, while cities tend to own airports, and states build and own highways. Freight-rail networks have hardly expanded in decades, for example, even as business has grown, because private railroads can't match vast state and federal investments in competing roads. Indeed, freight-line business is growing for the same reason as passenger utilization: Roads are too congested. But commuter-rail agencies want to run more trains on the same tracks that freight companies want to run more trains on, and conflicts are growing.



A jaunty, stainless-steel hat salutes passengers at the Expo Station on Singapore's new city-to-airport rail line. The architect is Foster and Partners.

PHOTOGRAPHY: © JOHN BARTLESTONE (TOP); RICHARD BRYANT/ARCAID (BOTTOM)

And then there's Amtrak. Defenders of Amtrak cite inadequate funding and Congressional meddling for the national rail agency's poor performance. Others say its incapable of making high-speed rail work. "Lots of people want high-speed trains, but they don't want Amtrak," says Joseph Vranich, a consultant who has worked for the agency and served on a council intended to reform it. In *Derailed: What Went Wrong and What to Do About America's Passenger Trains* (St. Martins Press, 1997), Vranich has compiled a 258-page indictment of 30 years of Amtrak's management mistakes and broken promises.

"GETTING PEOPLE TO THE AIRPORT IS THE NUMBER ONE FACILITY DESIGN ISSUE." —ROBERT DAVIDSON, PANYNJ

Amtrak may be in for a restructuring, which may pave the way for a true high-speed rail network, but it's one the General Accounting Office recently estimated will cost between $50 and $70 billion. It's a lot of money, to be sure, but a fraction of what airline bailouts and security upgrades are likely to cost.

While the high-speed rail debate can be relegated to the realm of politics, perhaps it shouldn't be. Today, there's no a clear concept of how multimodalism could work or how high-speed passenger rail fits in. A strikingly integrated vision was offered by Warren Manning, a landscape architect, that contains many of the elements transportation analysts would like to see: a nationwide system of commercial highways with dedicated freightways that feed a parallel freight-rail trunk-line system; of recreational roads that follow the nation's geography; of high-tech means to switch between modes. Manning proposed his scheme in 1923. (For more, see Keller Easterling's *Organization Space: Landscapes, Highways, and Houses in America*, MIT Press, 1999.) Maybe we need more Mannings now. ■

JFK Terminal 4

Queens, New York

1

SOM REPLACES ITS 1957 BUILDING WITH AN INTERNATIONAL TERMINAL BETTER SUITED TO THE EXIGENCIES OF TWENTY-FIRST-CENTURY AIR TRAVEL.

By Sarah Amelar

Architect: *Skidmore, Owings & Merrill—David Childs, FAIA, Marilyn Taylor, FAIA, Anthony Vacchione, AIA, Carl Galioto, AIA, partners; Peter Ruggiero, AIA, senior designer; Paul Auguste, Robert Chicas, project managers; Frank Mrakovcic, Scott Yocom, Tatiana Kasnar, senior technical coordinators; Frank Ruggiero, field architect*
Owner: *JFK International Air Terminal (JFK/IAT)*
Client: *JFK/IAT: a joint venture of Schiphol Amsterdam, LCOR, and Lehman Brothers*
Public partner: *The Port Authority of New York and New Jersey*
Interior designer: *Jacquelyn Suozzi, Mary Delaney*
Retail design: *Communication Arts*
Engineers: *Arup (structural and MEP for main terminal); TAMS Consultants (MEP concourses); Arup/TAMS Consultants (civil)*
Consultants: *Judith Heinz Landscape Architecture (landscape); Susan Brady Lighting Design (lighting); Arup (acoustical and IT); Wendy Feuer (art); BNP (baggage)*
General Contractor: *Morse Diesel International*
Size: *1,520,000 square feet*
Cost: *$1.4 billion*

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Program

New York City's Idlewild Airport, later rechristened John F. Kennedy (JFK) International, embraced a romantic view of air travel. Built in the 1950's, and one of the first major commercial airports, it offered a vision of pavilionlike terminals set along a ring road in a scenic parkland. Its architectural language—epitomized by Eero Saarinen's sculptural TWA terminal and Skidmore Owings & Merrill (SOM)'s International Style International Arrivals Building—celebrated the Modern moment, but the designs naively failed to anticipate the industry's booming transformations. And so, by 1996, when SOM was commissioned to revisit its original JFK site and address the demands of late-twentieth- and early twenty-first-century air travel, its 1957 Arrivals Building had largely outlived its usefulness.

The growth from 100- to 400-passenger planes; the evolving security requirements first prompted by 1970s hijackings; and the huge increases in air traffic stimulated by airline deregulation had all compromised the logic and wayfinding clarity of SOM's 1957 scheme. No longer could a departing passenger see the airfield—the immediate destination—from a curbside entry point. Caught in a rabbit warren of checkpoints and windowless passageways, this terminal's fin-de-millennium traveler was often separated visually from the planes. SOM had expanded the building modestly in the 1960s, but the terminal, like many of its era, embodied the notion that The Future had indeed arrived—and therefore it offered limited flexibility, with no clear plan for change or expansion.

The determination to replace it first emerged in the early 1980s with a master plan by I.M. Pei & Partners that essentially proposed to remake the airport. When that ambitious project was later scrapped, the Port Authority of New York and New Jersey, the government agency that operates JFK, chose a novel privatization method: Schiphol Amsterdam, operators of the Netherlands' major airport; LCOR, a developer; and Lehman Brothers, investment bankers, jointly formed a design-build-operate-manage consortium, called a DBOM, with the Port Authority as its public partner.

Engaged to design the new building, SOM was faced with the proviso of keeping the terminal—even as a composite of old and new—operational throughout the demolition and construction periods. The architect's challenge also included: 1) providing for flexibility and potential expansion; 2) increasing the number of contact gates from 14 to 16; 3) integrating a future light-rail system (to transport passengers from New York City and elsewhere in the airport) into the building; 4) introducing a 100,000-square-foot retail court and routing passengers through it; 5) reestablishing clear circulation with a strong sense of the whole.

Staging the project to minimize passenger inconvenience and streamline construction efficiency was "a complex puzzle," recalls the project's senior designer, Peter Ruggiero, AIA. To complicate matters, the siting was essentially dictated by the existing footprint, which could not be extended on the airfield side.

Solution

The architects, in effect, performed the old trick of yanking out the tablecloth from under the place settings. The carefully orchestrated three-and-a-half-year process involved building a loop of two roads, dedicated to the construction site and, later, to the terminal traffic; erecting a metal shed beside the old building to serve as a temporary arrivals hall; and demolishing existing elements in phases.

For the grand design gesture and spatial strategy, SOM partner Marilyn Taylor, FAIA, brought in lessons learned from Eero Saarinen's 1962 Dulles Airport, which SOM expanded in the early '90s. At Dulles, the continuous sweep of a catenary roof and open lines of sight to the tarmac "give a constant sense of where you've been and where you're going," observes Ruggiero. Also, that terminal's modular structural system anticipated expansion. In a similar way, SOM, working closely with ARUP

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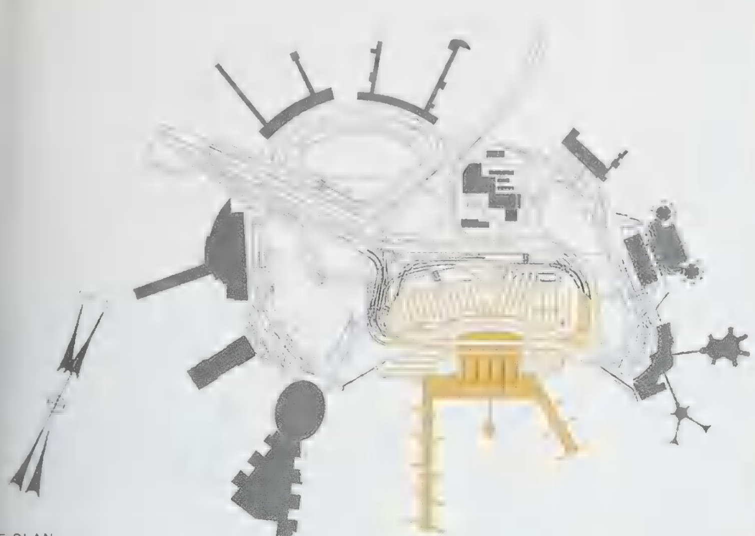
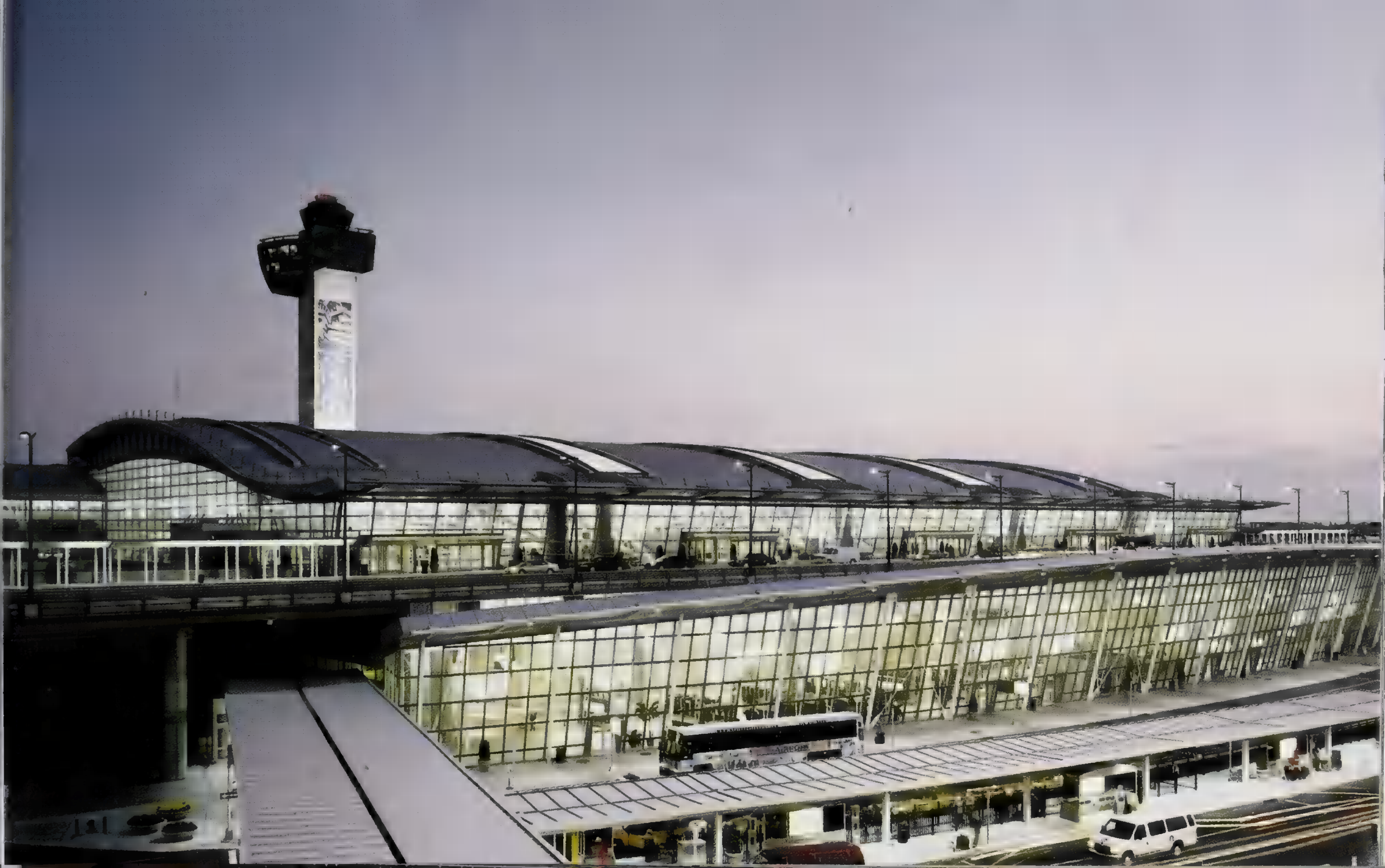
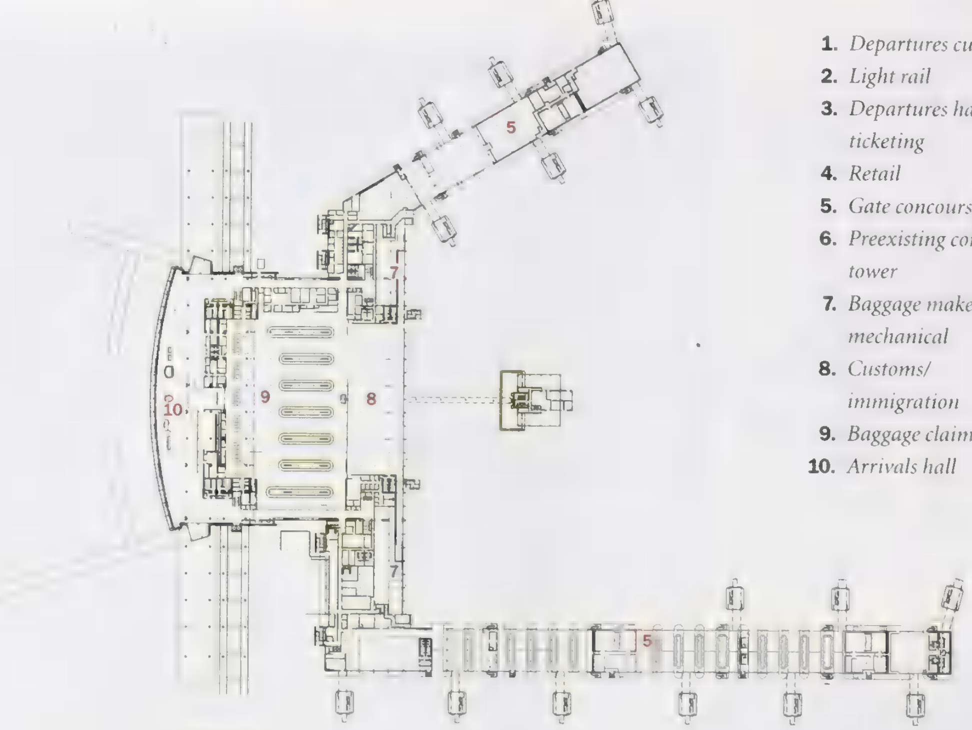


SITE PLAN

At curbside (below), the arrivals area projects out beyond the departures hall and elevated road, allowing daylight into the lower level. The departures hall's great curving roof is silhouetted against the skyline. The earlier control tower is by I.M. Pei.

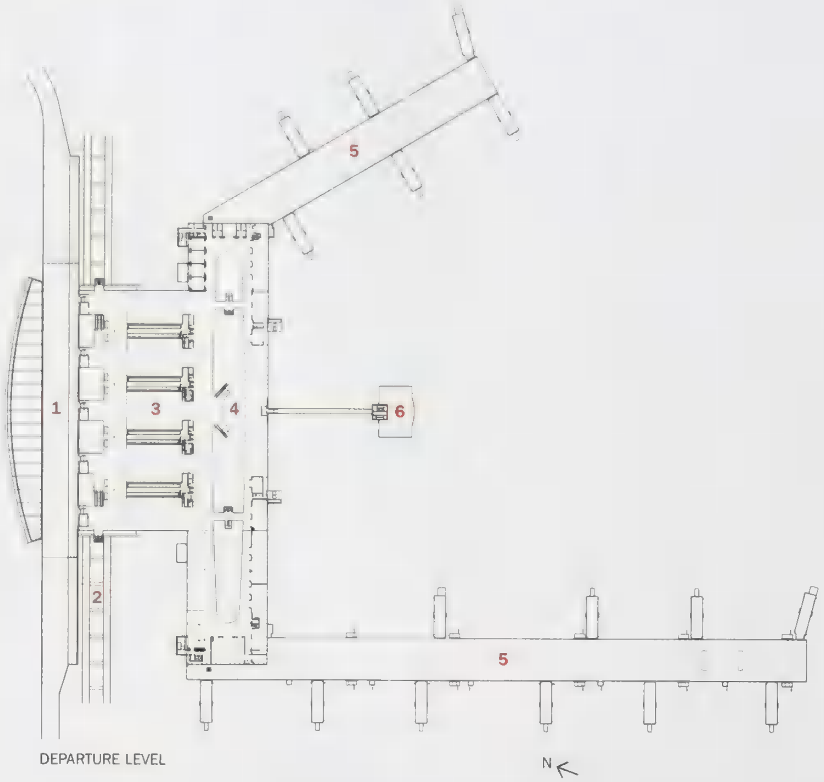


PHOTOGRAPHY: © JEFF GOLDBERG/ESTO



ARRIVAL LEVEL

1. *Departures curb*
2. *Light rail*
3. *Departures hall/ ticketing*
4. *Retail*
5. *Gate concourse*
6. *Preexisting control tower*
7. *Baggage make-up/ mechanical*
8. *Customs/ immigration*
9. *Baggage claim*
10. *Arrivals hall*



DEPARTURE LEVEL

engineers, created a great arcing roof as the terminal's iconic form. Lined in sheet aluminum, it recalls the taut, lightweight quality and articulated flaps of an airplane wing. It is supported by a modular, braced-frame structure erected perpendicular to the curbfront. Soaring over the departures hall and retail areas, the roof's 230-foot-span trusses extend several feet beyond the old terminal's arrival hall, allowing for complete structural independence between the existing building and the new one.

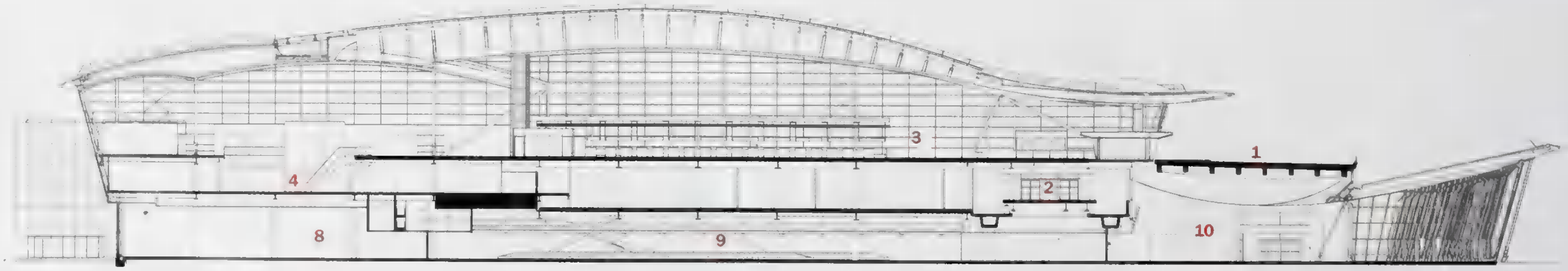
By fully glazing the curbside and airside facades, the architects restored immediacy between entry point and airfield.

Because selling space has become an integral and essential part of the program—and cash flow—of contemporary terminals, SOM provided 100,000 square feet for a retail zone, designed by Communications Arts. To avoid obstructing views to the airfield, the architects sank the retail space one level below the departures hall, but left it open to the great roof. SOM and ARUP also devised an open tripod column, instead of a bulkier member, to support the trusses. (With moveable joints, these tripods allow the roof to flex with snow and wind loads.) Reinforcing wayfinding, skylights mark major intersections and lines of circulation.

Generous spatial allotments between ticketing kiosks have accommodated the heightened security and longer check-ins prompted by last fall's terror attacks. Planned well before September 11, the terminal and concourse entry zones similarly allow for added screening points and devices.

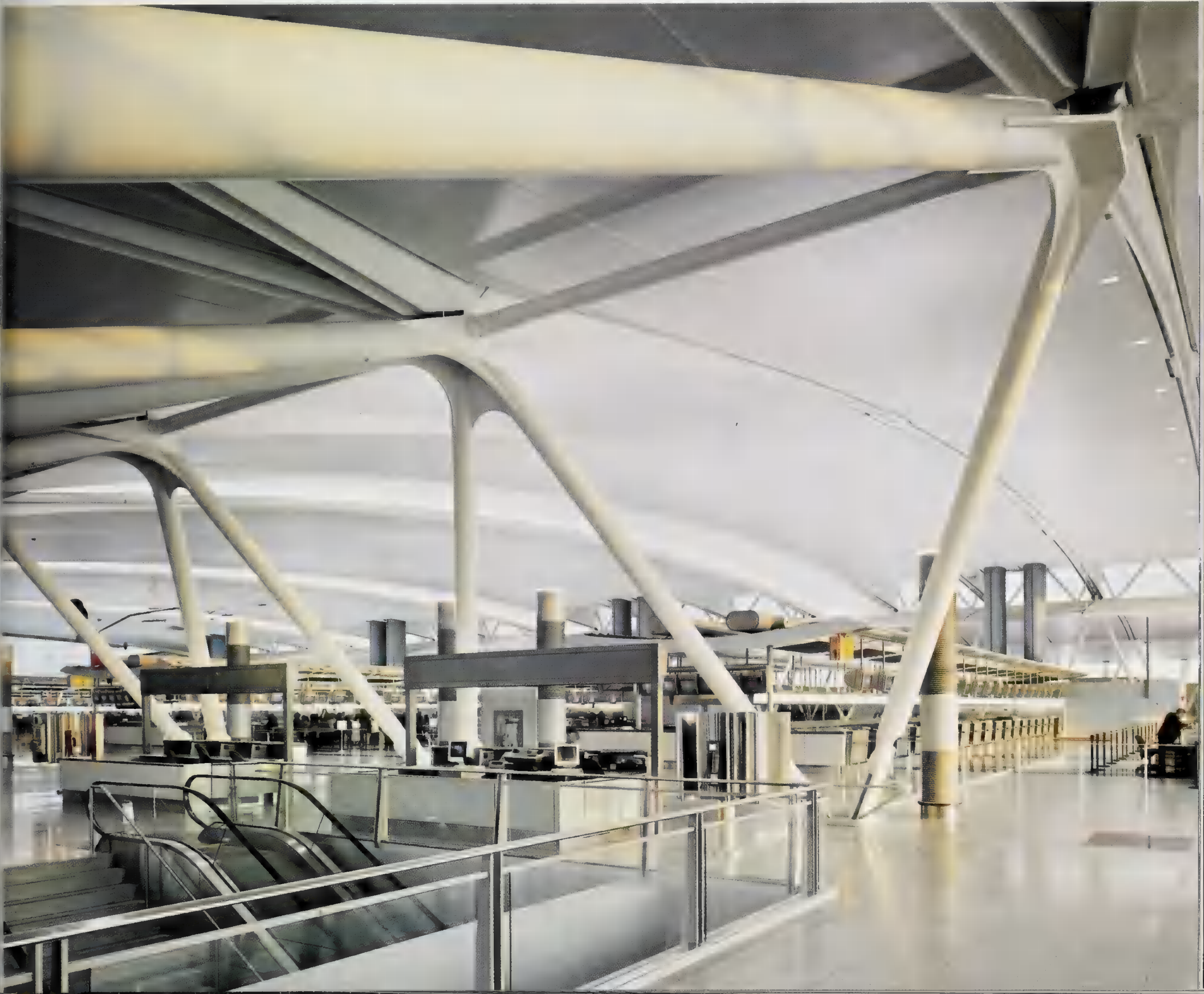
"But on the arrivals level, as on the departures level," says Taylor, "we wanted the experience to be

PHOTOGRAPHY: © JEFF GOLDBERG

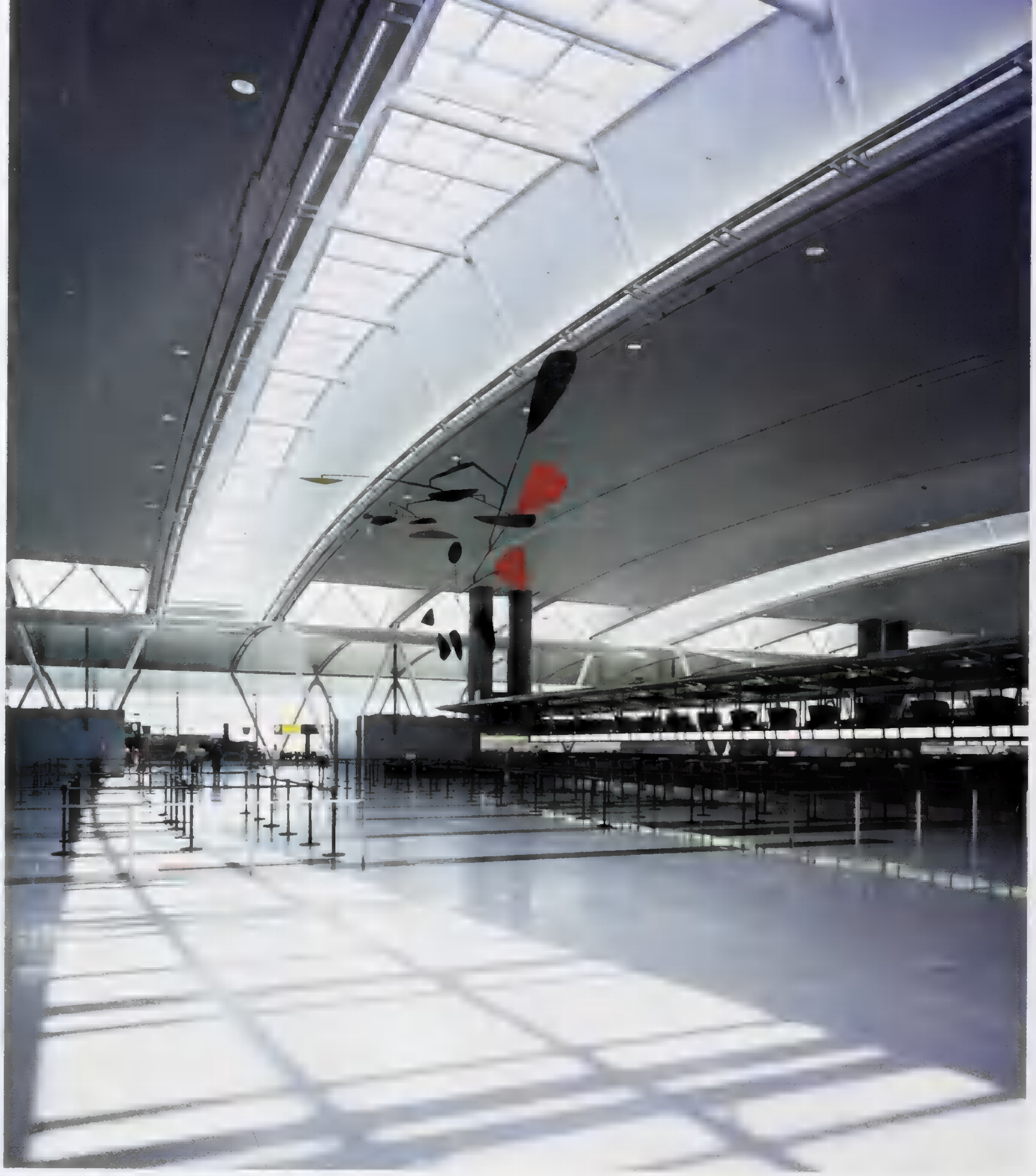


SECTION

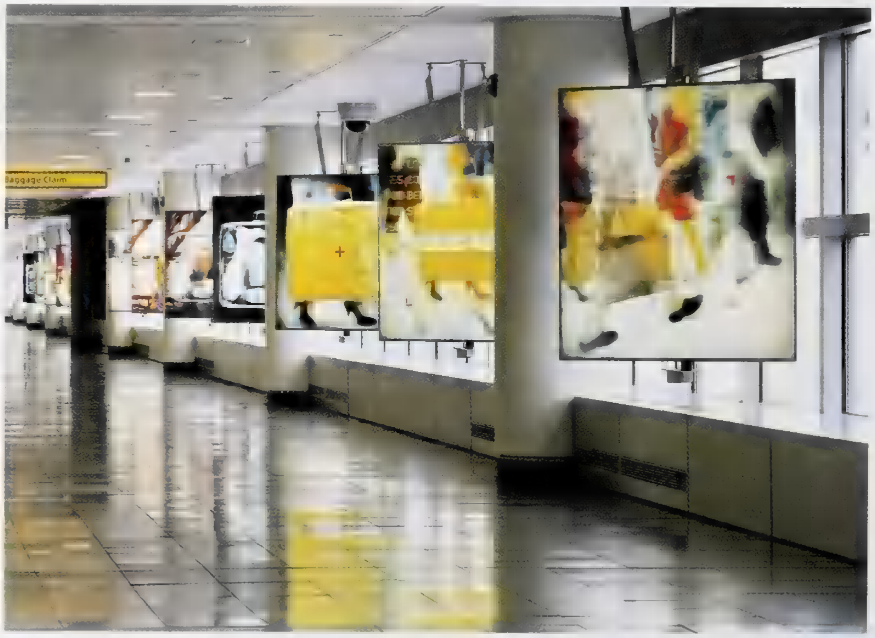
Skylights in the roof (far left) reinforce major lines of circulation. The food court, one flight below the departures level, is open to the bowed, unifying roof (left). The truss, formed by a series of tripod supports, meets the roof with moveable joints that flex with snow and wind loads.



PHOTOGRAPHY: © JEFF GOLDBERG/ESTO



The arts program includes a newly restored Calder mobile (above and opposite, bottom) that was commissioned for the original 1957 terminal, and a sequential piece by Diller + Scofidio in the "sterile" arrivals corridor (right).



dignified, welcoming, and exciting—instead of the more typical American way of bringing arriving passengers through endless corridors, only to emerge at a curb on the underside of an elevated road." On the curbside, the architects projected the arrivals area out from under the departures roadway, taking advantage of the fact that international arrivals—with immigration and customs, in addition to baggage—typically demand more space than the corresponding departures. Open to daylight and views, the curved and canted facade of the arrivals hall is fully glazed—as are the exterior walls of the the gate concourses that look out onto the airfield.

The interior is also enlivened by an arts program, including a sequential piece by architects Diller + Scofidio that unfurls a visual narrative as travelers proceed along a "sterile" (controlled) corridor from arrival gates to immigration. An Alexander Calder mobile—evoking loft and motion—from the 1957 terminal was restored and placed prominently in the new departures hall.

Commentary

The departures hall successfully brings back the exhilaration and elegance of early air terminals. It also gives clarity and continuity to the journey from curb to gate.

Clearly, SOM had to make tough decisions about how to allot the budget and what to emphasize. The gate concourses and much of the arrivals level are less remarkable than the departures hall. Beige plastic-laminate wall panels lining many arrivals zones are a bit drab, as are the utilitarian, relatively low-ceilinged gate concourses. "But," explains Ruggiero, "the character of the gate areas is quite intentional. Americans tend to go right to the gates and often stay there—but Schiphol's mandate was to get the passengers to spend time in the retail area."

The bottom line: The terminal of the twenty-first century must be economically viable in ways never imagined in earlier eras—but, as SOM has shown, it can still celebrate the original spirit of air travel. ■

PHOTOGRAPHY: © DOUGLAS SPRANGER

SOM did not design the food court itself (left) but carved out the space for it. The great headhouse roof (below) follows an expandable module, as do the check-in kiosks beneath it.

PHOTOGRAPHY: © DOUGLAS SPRANGER

ICE Station
Frankfurt, Germany

2

BOTHE RICHTER TEHRANI GIVES SPACE-AGE FORM TO A ROADWAY-STRADDLING HIGH-SPEED AIR-RAIL STATION.

By James S. Russell, AIA

Architect: *Bothe Richter Tehrani—Jens Bothe, partner in charge; Berthold Staber, Christian Feck, Lutz Gnosa, Frank Görge, Michael Horn, Wolfgang Labsch-Boga, Katja Pahl, Ali Pakrooh, Monika Pfretzshner, Claudia Springmeier, Peer Weiss, Chistopher Wilford, Arndt Woelke, Katrin Koulouri, Irene Manhardt, Ulf Schröder, Jürgen Wilhem, design team*
Client: *Deutsche Bahn, AG*
Engineers: *Dr. Ing. Binnewies (structural); HL-Technik (mechanical)*
Developer: *Deutsche Bahn*

Size: *380,000 square feet*
Completion date: *1999*

Sources
Glass and glass-support system for station roof: *MERO Systems; Seele GmbH & Co.; Josef Gartner & Co.; Magnus Müller*
Elevators and enclosures: *Otis*
Lighting: *SELUX; NORKA; BEGA; Siteco; WILA; Zumtobel Staff*
Furniture: *architect designed, manufactured by Signature Stadtmobilia; System De Lucci*

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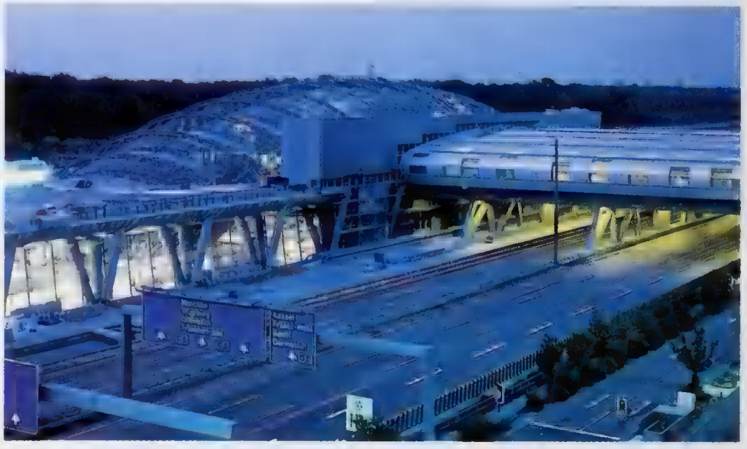
Program

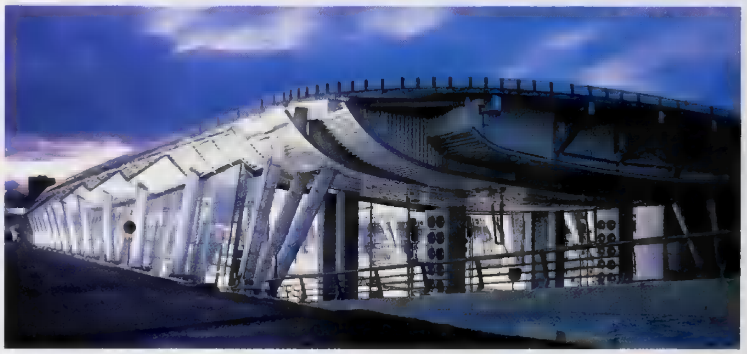
Architect Bothe Richter Tehrani (BRT) found itself with a particularly unenviable site for a high-speed rail station at the edge of Frankfurt airport: a thin strip of land between a major freeway and highway ramps serving the airport, separated from the main terminal complex by a hotel and office-building development constructed years before (site plan, opposite). Deutsche Bahn (the national railroad) hoped to finance the project in part by adding income-producing uses, but they were scheduled for a subsequent phase. Still, BRT's station had to be built as a platform for the addition of about 180,000 square feet of undetermined uses without disturbing train or station operations.

The station is part of what transportation consultant Matthew Coogan calls the most aggressive air-rail integration strategy he has yet seen. Frankfurt, one of Europe's largest gateway airports, would rather use its limited capacity to serve large long-haul planes than small planes making short hops. Once the high-speed system is completed, Lufthansa has agreed to drop all its short-haul flights from Dusseldorf and Cologne (and eventually other destinations) in favor of trains.

Solution

The 212-foot-long, four-track station has been sized to eventually serve nine million passengers annually.



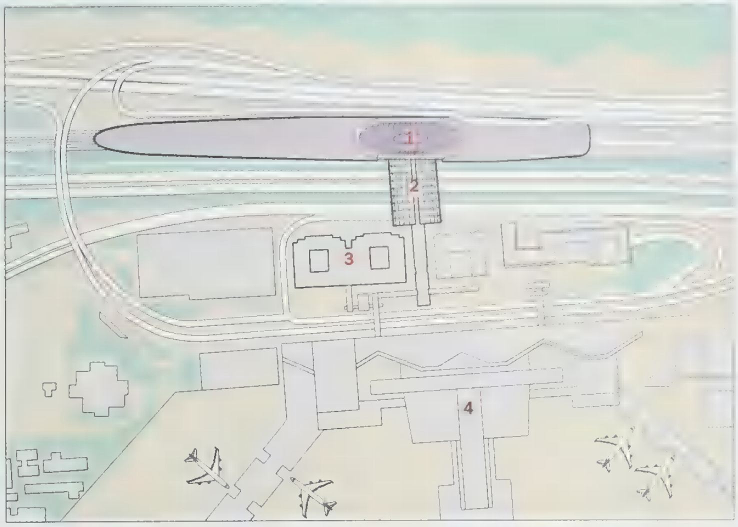


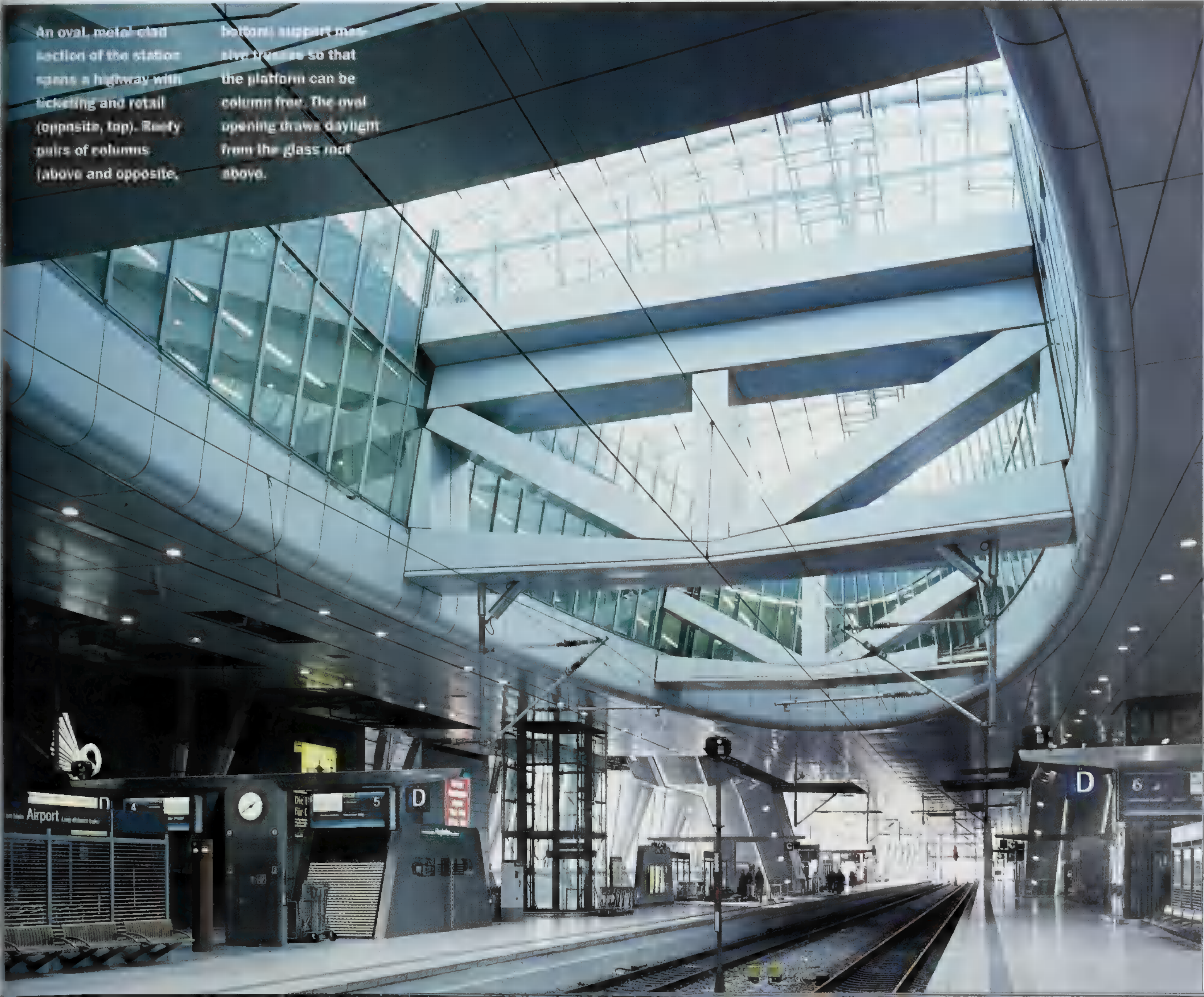
PHOTOGRAPHY: © JÖRG HEMPEL

The two rows of splayed, paired columns at platform level are beefy enough to hold up the later addition of commercial space as well as massive trusses largely concealed within the metal cladding of the hull-shaped ticketing level. By spanning the full width of tracks, the trusses leave the platforms column free.

The column pairs are spaced relatively far apart along the long sides of the station, because "the main goal was always to have daylight on the platform level," said Jens Bothe, the architect's partner in charge. The designers also carved a large oval opening to let upper-level daylight down to the center of the platform level.

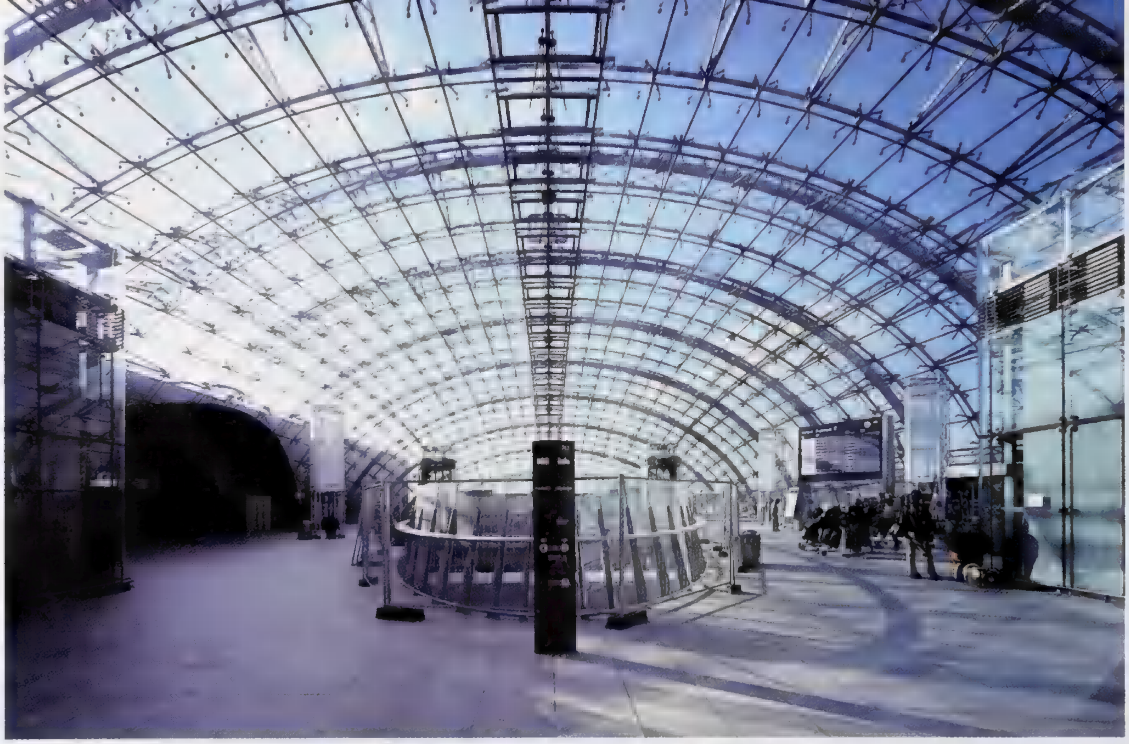
The architect "enclosed" the platform level with glass along the long sides and a curtain of air that trains pass through at the short sides. This minimally air-conditions the train platform—a first in Germany—introducing an airport-quality passenger experience. The glazing also reduces noise from the

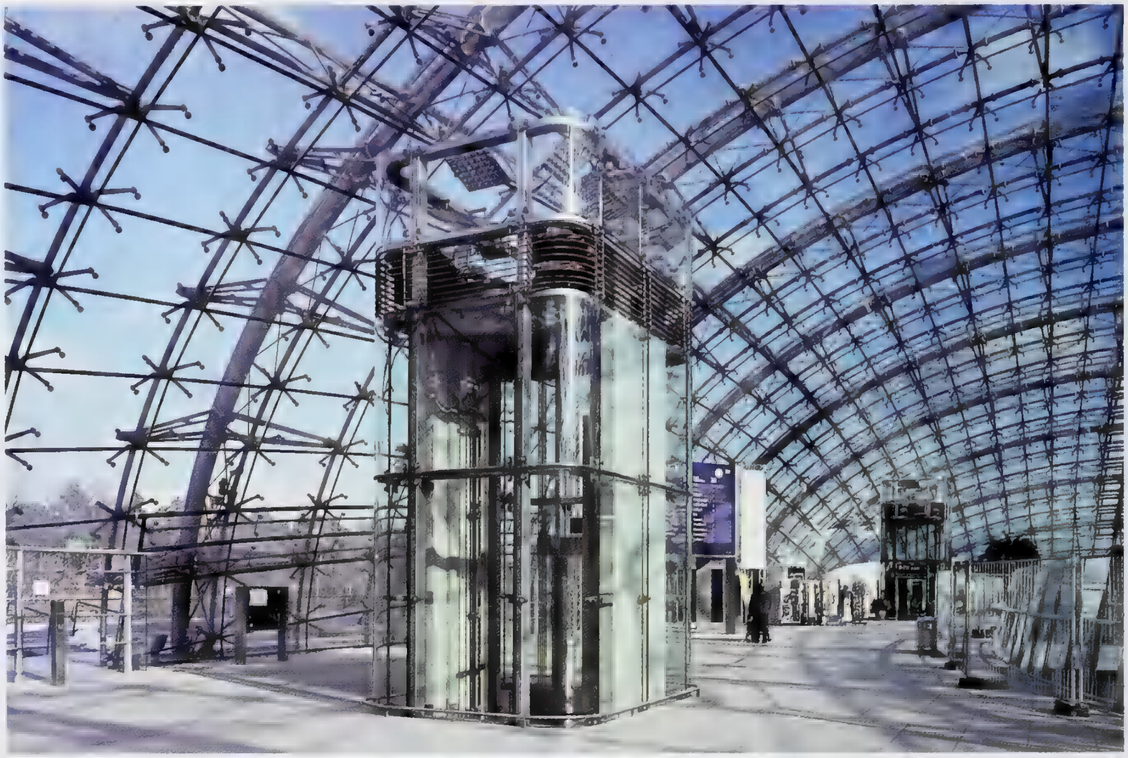




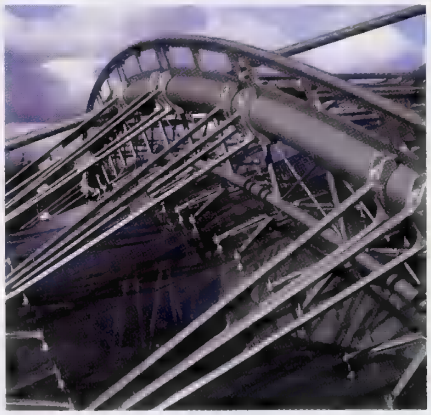
An oval, metal-clad section of the station spans a highway with ticketing and retail (opposite, top). Beefy pairs of columns (above and opposite, bottom) support massive trusses so that the platform can be column free. The oval opening draws daylight from the glass roof above.

PHOTOGRAPHY: © JÖRG HEMPEL





Tubular ribs frame the ticketing-level bubble (above) from the exterior (right), supporting armatures that attach glass by bolt-through connections.



surrounding motorways.

As passengers rise to the ticketing level, they find themselves in a veil-like bubble of glass. The two-layered glass panels are specially treated to offer shading and reduce solar-heat gain. A ribbon of clear glass at the highest point of the vault contains some operable units to vent accumulated hot air. Unconditioned fresh air is supplied at the base. Bothe says the temperature of the space rises no more than 2.5 degrees Celsius above that of the outside on hot days.

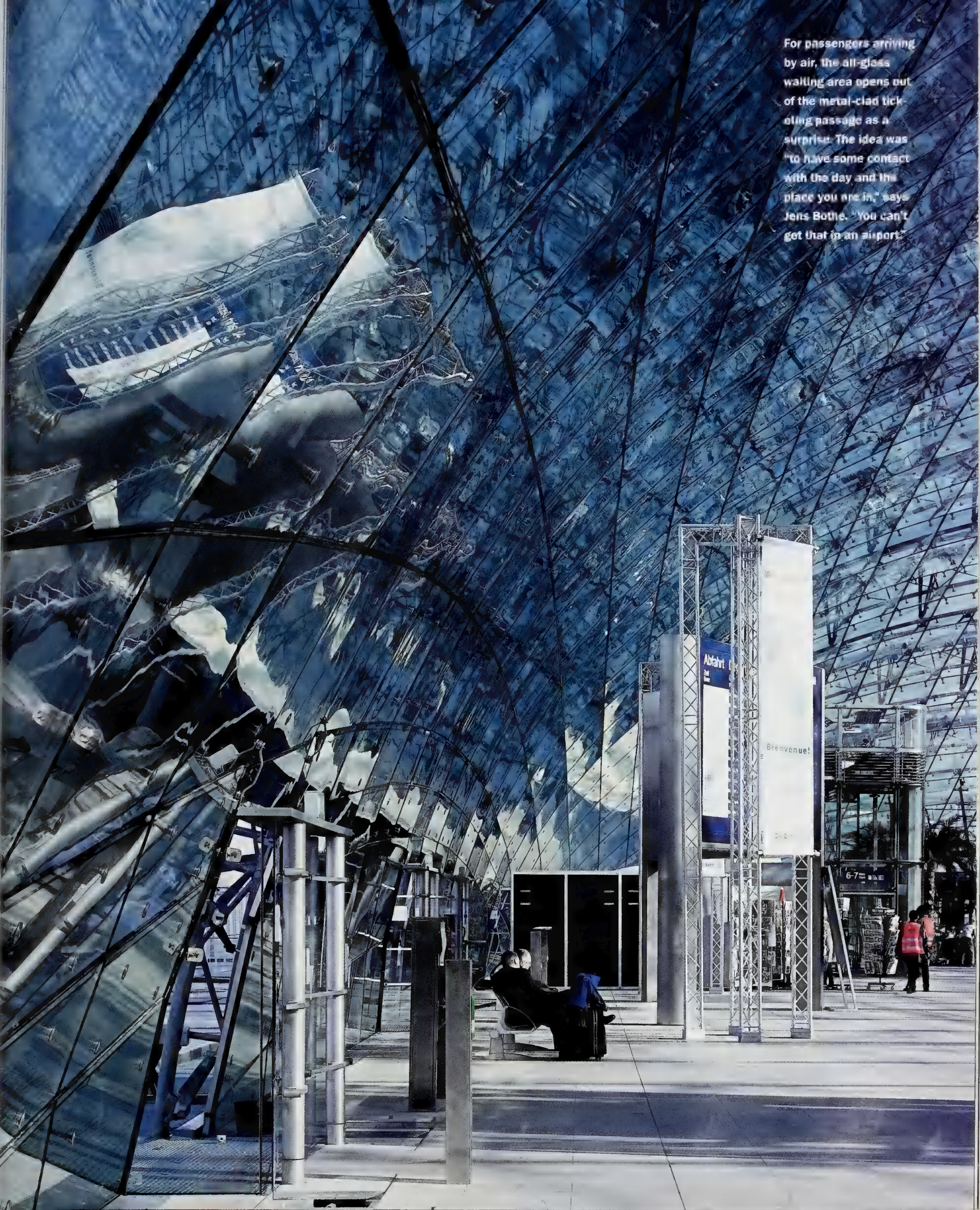
BRT's bubble will disappear once the second phase is constructed, replaced by a domed skylight within a long seven- to nine-story extrusion that Bothe likens to a submarine.

A curved, metal-clad bridge conveys train users across the highway and accommodates a ticketing hall and some retail space. It leads through the commercial complex to another bridge, which plugs the facility into the main terminal.

Commentary

Joseph Vranich, a high-speed rail advocate and longtime critic of Amtrak, divides American rail proponents into two camps, the incrementalists and the visionaries. Frankfurt's ICE Station is clearly in the visionary mode. The 136-mile Cologne-to-Frankfurt trip takes about 55 minutes on the new trains, an average speed of close to 150 mph. (On Amtrak's fastest route, devised in the incrementalist mode, a similar distance—Philadelphia to Washington, D.C.—takes about an hour and 50 minutes.)

But the vision of the Deutsche Bahn leaders who commissioned the project, Heinz Durr and Martin Lepper, extended beyond getting the tracks in place. Marching down the highway median like a city-block-size centipede, the Frankfurt station speaks to the excitement travel may one day elicit again. Rising from the airy platform to the dramatic, light-bathed bubble offers passengers a visceral yet reassuring experience—one that's rare in air travel today. ■



For passengers arriving by air, the all-glass waiting area opens out of the metal-clad ticketing passage as a surprise. The idea was "to have some contact with the day and the place you are in," says Jens Bothe. "You can't get that in an airport."

Portland International Airport

Portland, Oregon

3

ZIMMER GUNSUL FRASCA'S AIRPORT EXPANSION INCLUDES A DROP-OFF-CURB CANOPY THAT IS AN AIRPORT ICON AS WELL AS A RAIN SHELTER.

By Sheri Olson, AIA

Architect: *Zimmer Gunsul Frasca—Robert Packard, AIA, partner in charge; Robert Frasca, FAIA, design partner; Larry Bruton, FAIA, partner; Doug Sams, AIA, Ernest Grigsby, project managers; Mark Foster, AIA, Eugene Sandoval, Rich Dunham, senior designers; Jan Willemse, Erkki Ojala, AIA, Curt Williams, William Ullman, project architects*
Architectural subconsultant: *Fletcher Farr Ayotte*
Client: *Port of Portland*
Consultants: *KPFF (structural); PAE Consulting Engineers (mechanical/electrical); Howard Needles Tammen & Berendoff (terminal planning); Mayer/Reed (landscape)*
Contractors: *Baugh Construction; Hoffman Construction*

Size: *670,000 square feet of new and remodeled space in terminals; 120,000 square foot canopy; 985,000-square-foot garage expansion*
Cost: *$422 million*
Completion date: *Phase I, 1998; canopy, 2000; Phase II, 2002*

Sources
Metal panels: *Alucobond; Alpolic*
Curtain wall: *Kawneer*
Skylights: *Naturalite; Evergreen*
Glass: *Viracon*

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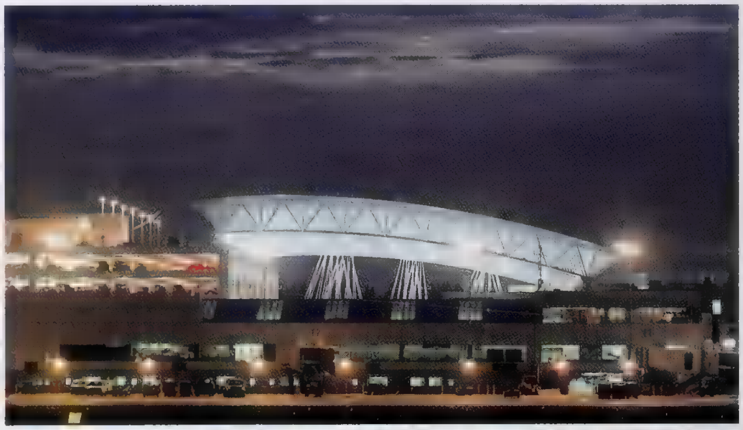

Program

For architect Zimmer Gunsul Frasca (ZGF), $422 million worth of expansion and improvements to Portland International Airport depended on solving long-standing gridlock at passenger drop-off areas. The designers could not simply extend the curb, because the terminal was wedged between two runways.

For Phase I of the most ambitious development in the airport's 56-year history, ZGF added a 10-gate, 170,000-square-foot extension of the terminal's southern leg, which was completed in 1998. Then came the Terminal Access Program, which was finished in 2000 and included tripling the size of an existing parking garage and improving terminal access via pedestrian skybridges at the ticketing level and tunnels at the baggage-claim level.

Phase II of the terminal expansion, which includes a new concessions court and 500,000-square-feet of new and remodeled space in the central ticket lobby and lower-level baggage-claim area, opened to passengers in the fall of 2001 and will be completed early in 2002.

A new light-rail station also had to be threaded into the terminal's four-level circulation system. Thanks to unusual foresight, there was a preexisting right-of-way available to extend the city's light-rail system to the terminal. Bechtel Enterprises built the extension, the 5.5-mile Airport Max, in exchange for development rights to a 120-acre, high-density transit-oriented project on Port-owned land adjacent to the airport.

Solution

"Airports tend to grow in unpredictable increments, so our goal was a legible design that reads as a whole," says partner Bob Frasca, FAIA. ZGF added four new vehicle lanes at the ticket-lobby level and a new center island, effectively doubling curb space for passenger loading and unloading. "The only

Sheri Olson, AIA, is RECORD'*s Seattle-based contributing editor and the author of* Miller/Hull.

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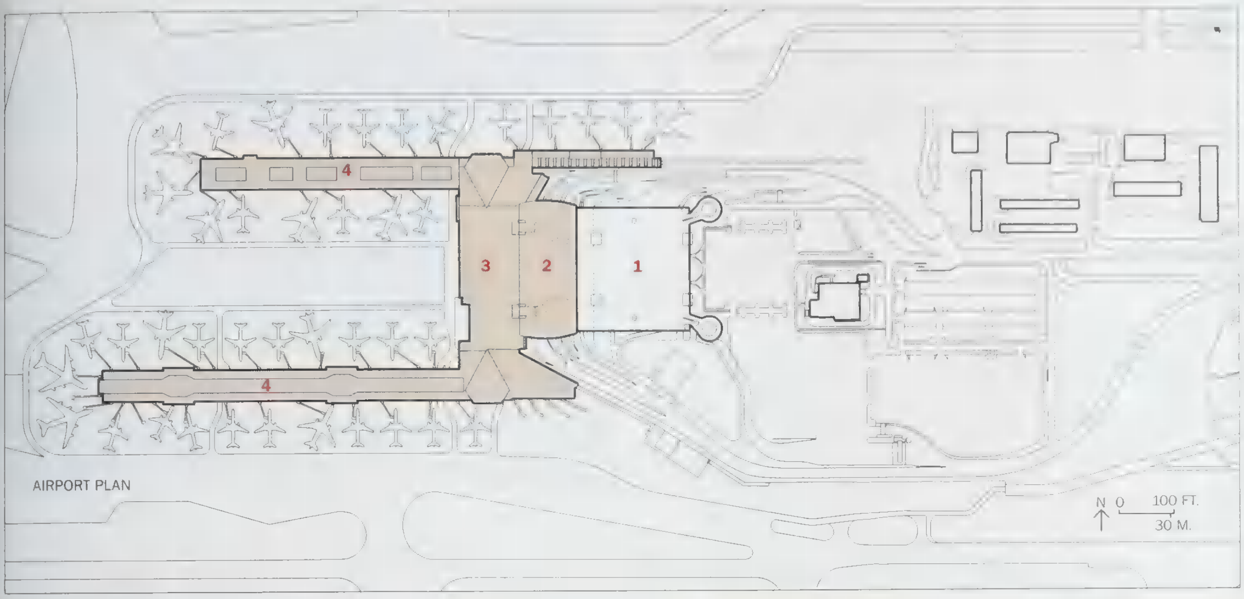
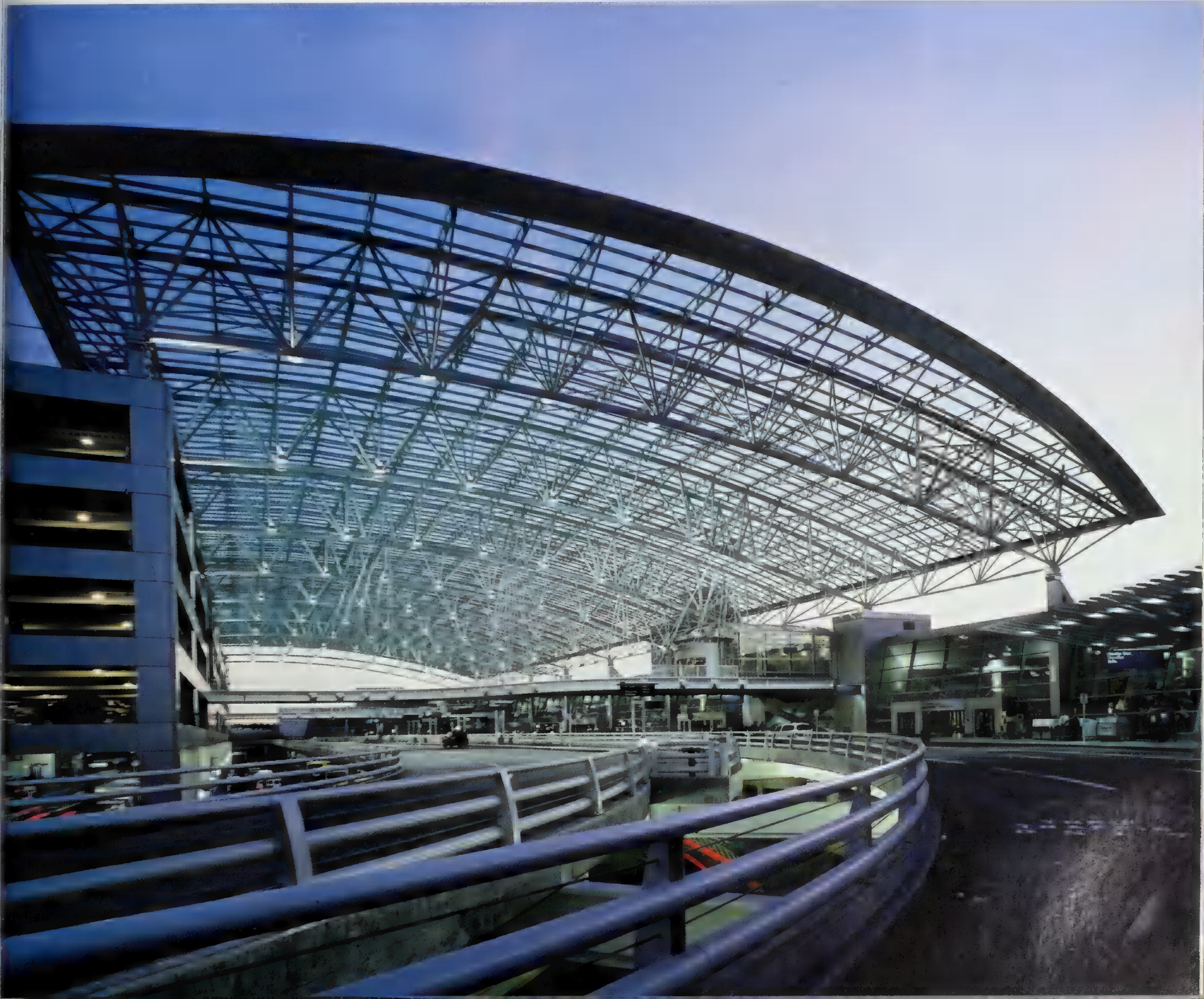


1. *Parking garage*
2. *Canopy*
3. *Terminal*
4. *Concourse*

ZGF designers didn't think passengers would use the wide drop-off area without a canopy (below), which conveys a welcoming gesture from a distance (opposite, top). The city's light-rail system enters at grade (opposite, bottom).



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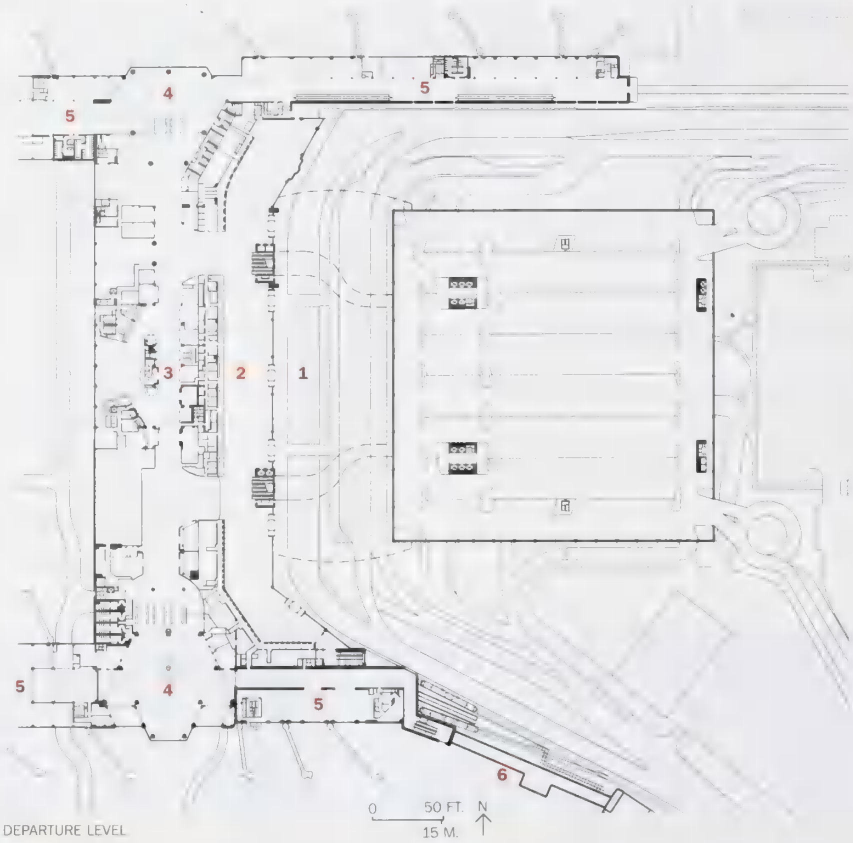
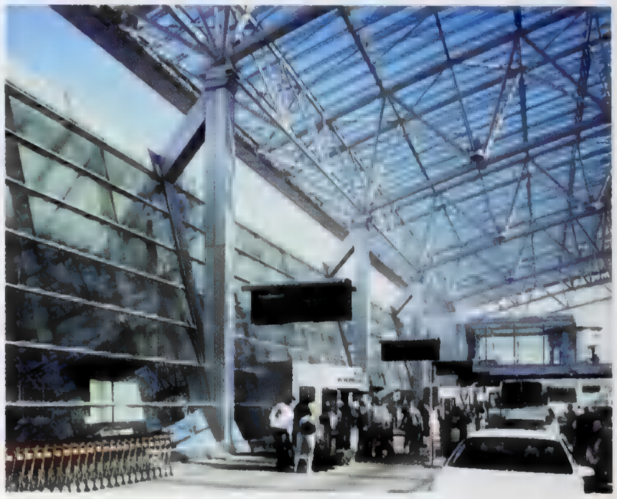
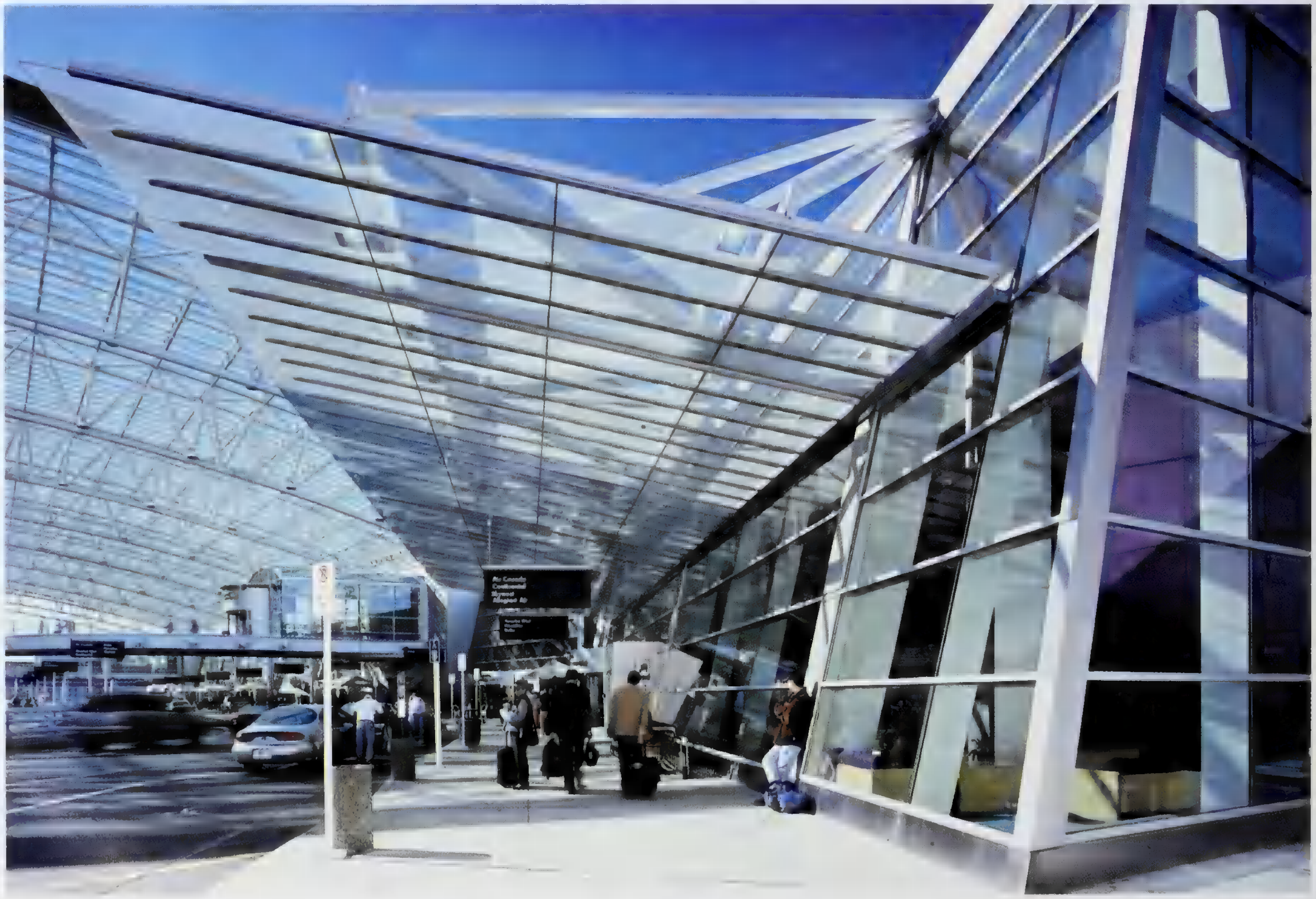


DEPARTURE LEVEL



1. *Drop-off*
2. *Ticket lobby*
3. *Retail*
4. *Concourse lobby*
5. *Concourse*

The glass facade of the extended terminal echoes the slope of the canopy (above and below), which allows the interior to borrow light and a lacy network of shadows.



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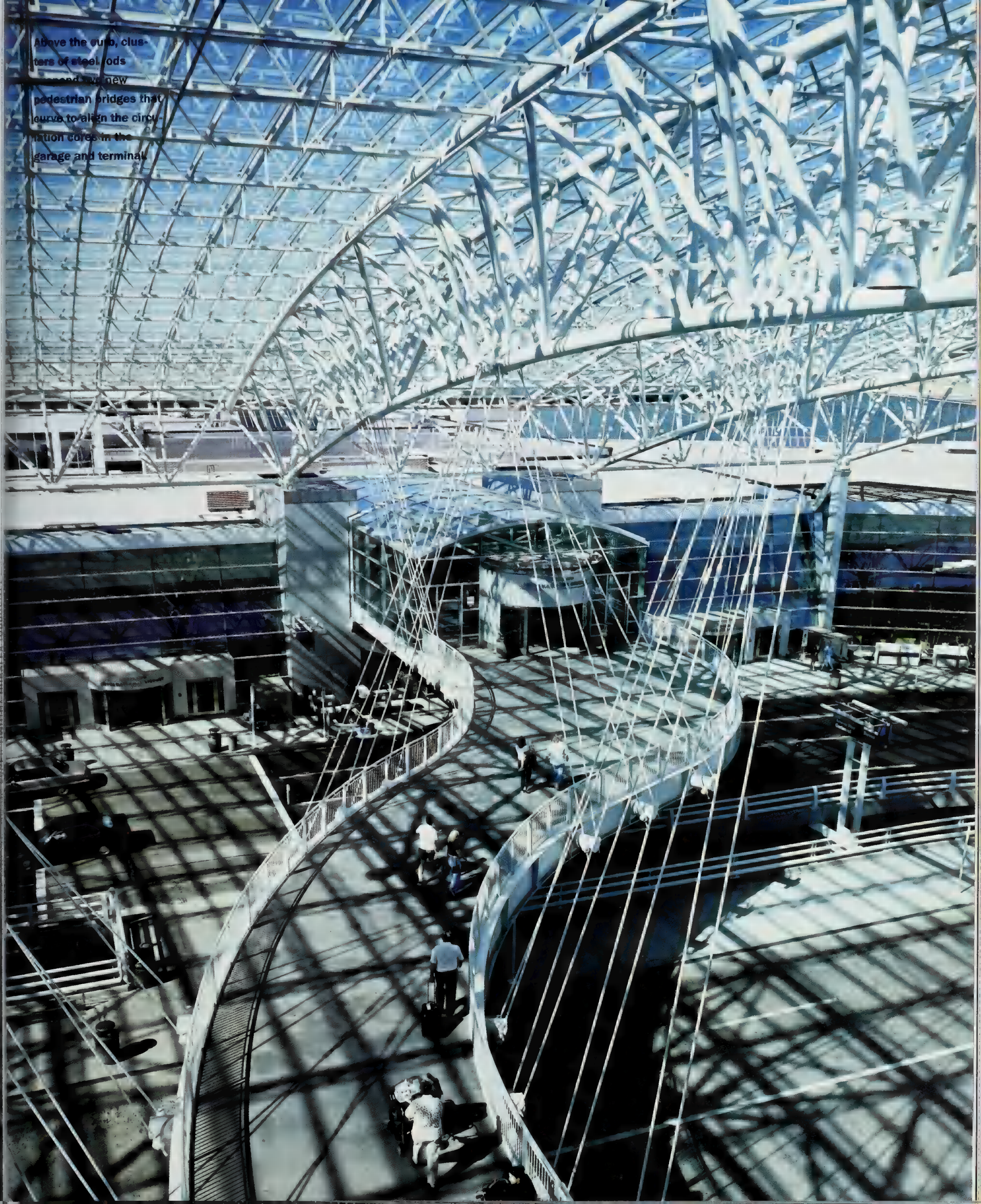
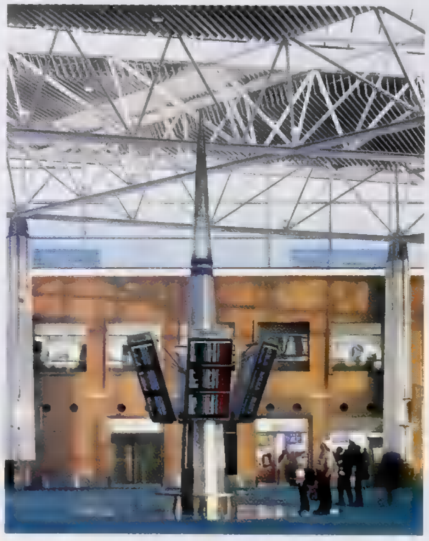
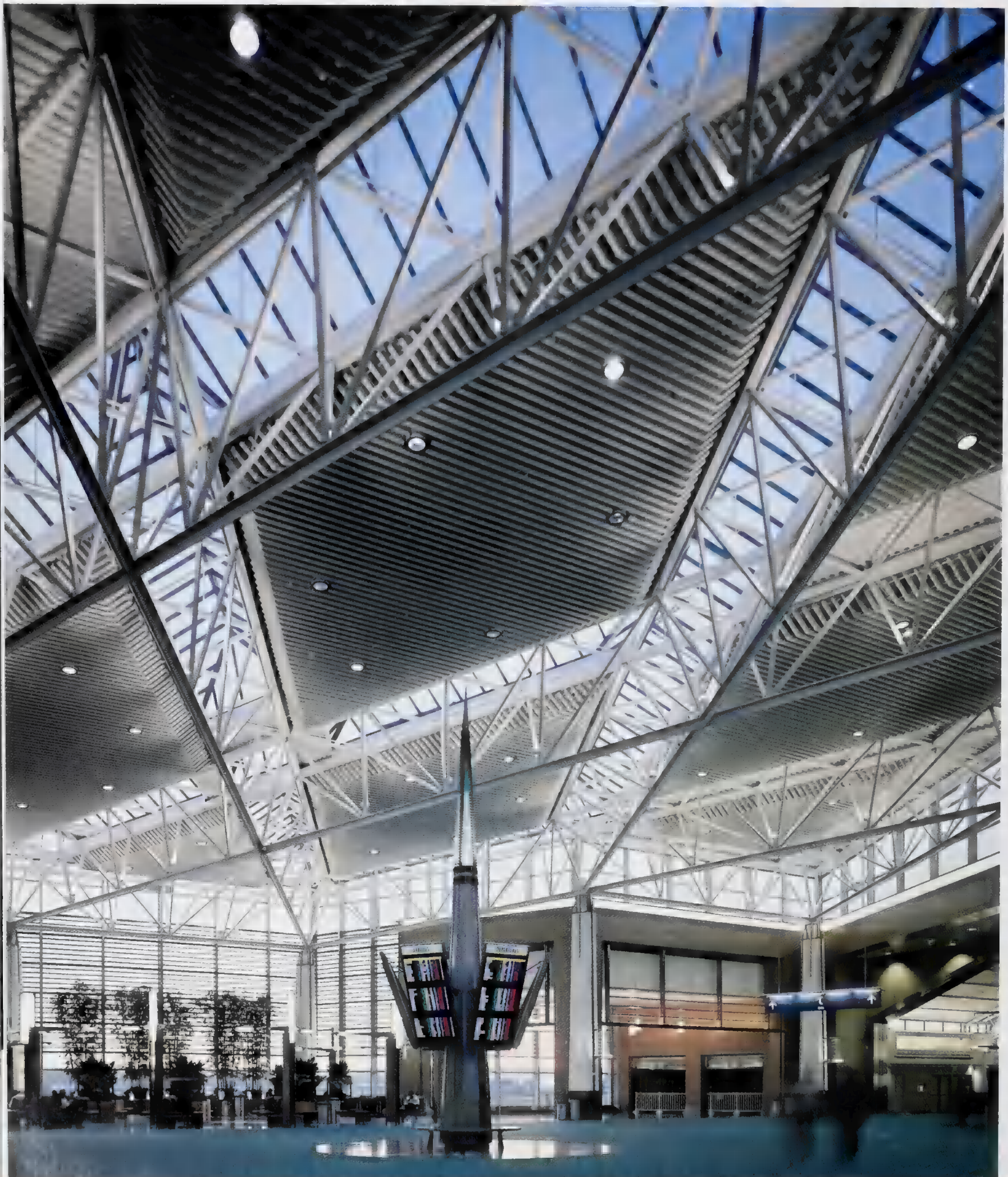


Above the curb, clusters of steel rods suspend two new pedestrian bridges that curve to align the circulation cores in the garage and terminal.

PHOTOGRAPHY: © ECKERT & ECKERT (THIS PAGE AND FOLLOWING PAGE); TIMOTHY HURSLEY (OPPOSITE)

While strip skylights (below) draw daylight into the concourses, works by artist Larry Kirkland offer lively distraction. Striped poles (near right) are festooned with emblems of the region, and a tapering tower (far right) supports flight-information screens.





way to get people to use the outbound lanes was to protect them from rain, so we added a glass canopy," says Frasca. The 120,000-square-foot glass-and-steel structure also has created a "front porch"—the airport's new signature.

Under the canopy, circulation is segregated vertically, with arrivals and baggage at grade and enplaning traffic at a ticketing level one story up. The architects pushed the front wall of the terminal out 25 feet to create more room for circulation and ticket queuing inside. The existing garage grew four stories and was extended toward the terminal so that it could anchor the canopy. (Depending on how evolving security regulations play out, public use of spaces closest to the terminal building may be prohibited.)

Commentary

Unlike the generic spaces found in most airports, Portland's fosters a sense of place without relying on tired regional emblems or sacrificing legibility. The long concourses are punctuated with rows of tropical fig trees, and zippers of skylights make the most of natural light in an overcast climate. The Oregon Marketplace, in the main concession area, features local cuisine and specialty shops, offering the kind of local flavor that counts. Spaces within the airport are differentiated to provide visual relief as well as landmarks for wayfinding. Mid-concourse concession areas become indoor piazzas surrounded by coffee bars, newsstands, and art installations.

Rather than rely on hackneyed flight-related symbolism, ZGF's handling of the roof's three-point truss system is elegantly straightforward. It makes a bright spot out of the drop-off curbs—typically throwaway spaces promising a grim travel experience. Making the most of its greenhouse potential, oversize trellises on the face of the garage are heavily planted with Portland's official flower so pedestrians on the skybridges pass through blooming arbors into the City of Roses. ■

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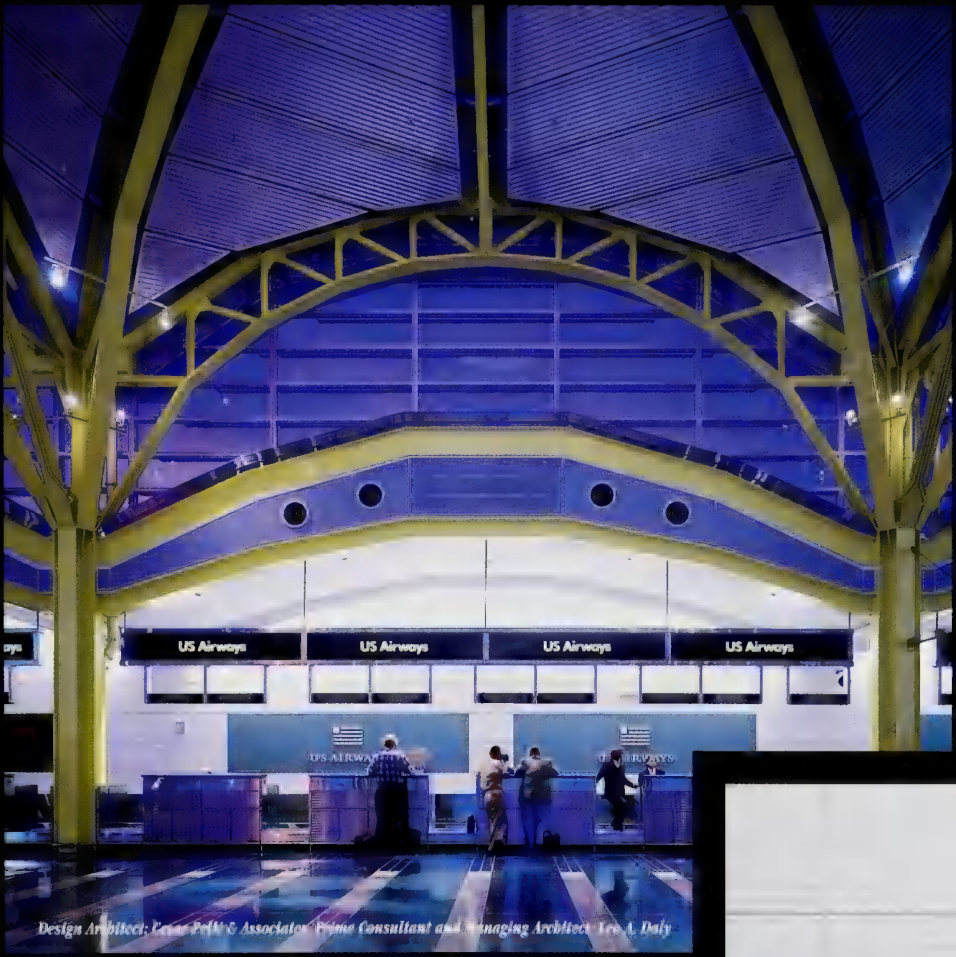

Design Architect: Cesar Pelli & Associates Prime Consultant and Managing Architect: Leo A. Daly

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New Ways to Build Better, Faster, Cheaper

ARCHITECTS STEVE KIERAN AND JAMES TIMBERLAKE USE TECHNOLOGY TRANSFER TO REWRITE THE LAWS OF CONVENTIONAL WISDOM IN DESIGN AND CONSTRUCTION.

By Sara Hart

The facade for the Melvin and Claire Levine Hall at the University of Pennsylvania is a factory-made, pressure-equalized, double-glazed unit.

RENDERING COURTESY KIERAN TIMBERLAKE ASSOCIATES

What is technology transfer? The term has been around for 30 years in the automotive and aerospace industries and, more recently, in university research quarters. In the broadest terms, technology transfer is the passing along of information, prototypes, processes, and inventions from one specialized industrial sector to another for the purpose of commercialization and dissemination to a larger consumer base.

Actually, technology transfer is an industry in and of itself. Most universities and their faculty benefit from royalties received when they license their inventions to manufacturers of everything from medical devices to home furnishings. At the Marshall Space Flight Center's Technology Transfer Department (www.nasasolutions.com), the National Aeronautics and Space Administration (NASA) has an entire program devoted to finding commercial applications for its inventions and innovations and publishes a journal called *Spinoff* (www.sti.nassa.gov/tto), which reports annually on those NASA technologies that have been successfully transferred to the private sector. The built environment has benefited a great deal from aerospace inventions, although most architects would be hard-pressed to name any. (See sidebar, page 138).

Historically, the architectural profession has been the passive recipient of innovation, because new methods and materials have flowed in only one direction: from inventor to manufacturer to designer. The profession's apparent indifference to innovation in other fields and the decentralized nature of the design and construction industries has hindered architects creatively and kept builders lagging decades behind other industries that manufacture products as well as provide services. Yet, there is recent evidence that practicing architects and even architecture students ["Weird Science in a New Age of Industry," RECORD, April 2001, p.163] are getting their hands dirty, at least figuratively, in the newly hip fields of materials science and product development. Specifically, two Philadelphia architects have embarked on an ambitious project to prove that buildings can be built faster, cheaper, and better by borrowing not just the materials but the processes from other industries. In their case, the role model is the automotive industry.

CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ AIA Continuing Education article. To receive credit, turn to page 138 and follow the instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. Describe how technology transfer works.

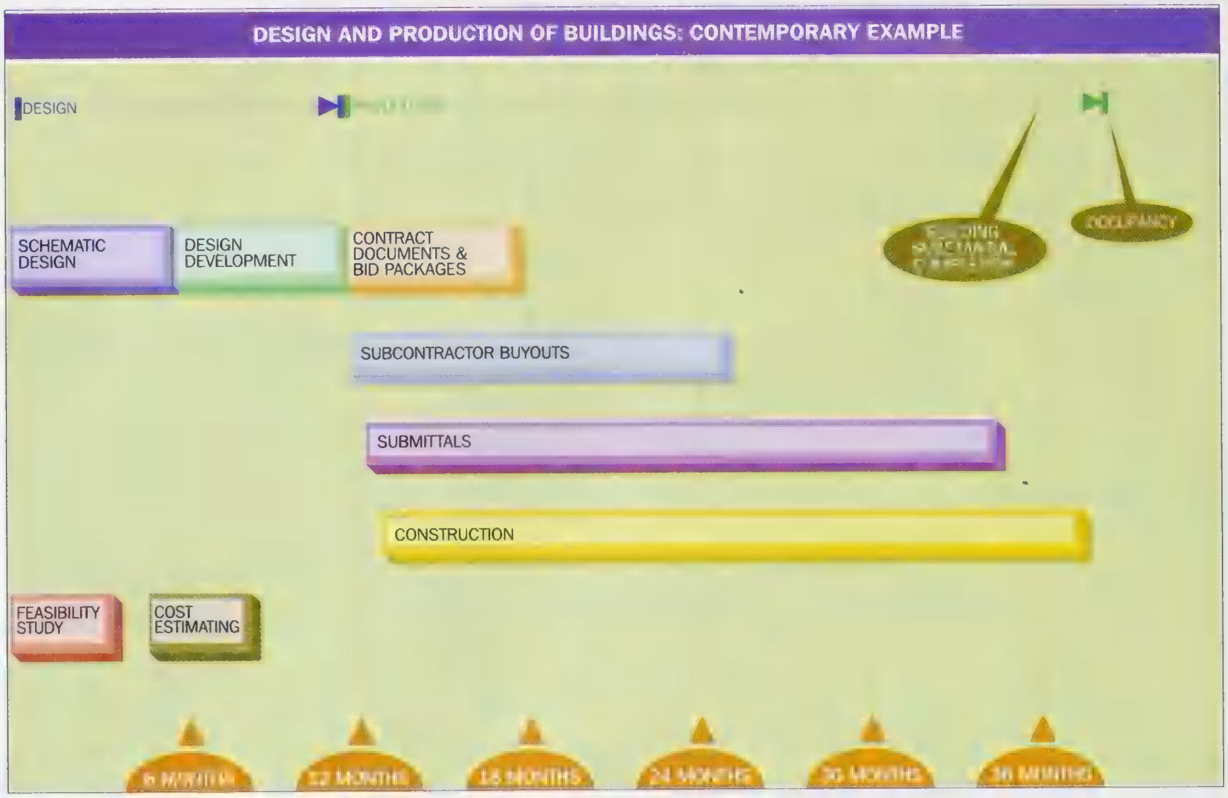
2. Explain how technology transfer can benefit architecture.

3. Describe unitized construction.

WWW For this story and more continuing education, as well as links to sources, white papers, and products, go to ***www.architecturalrecord.com***

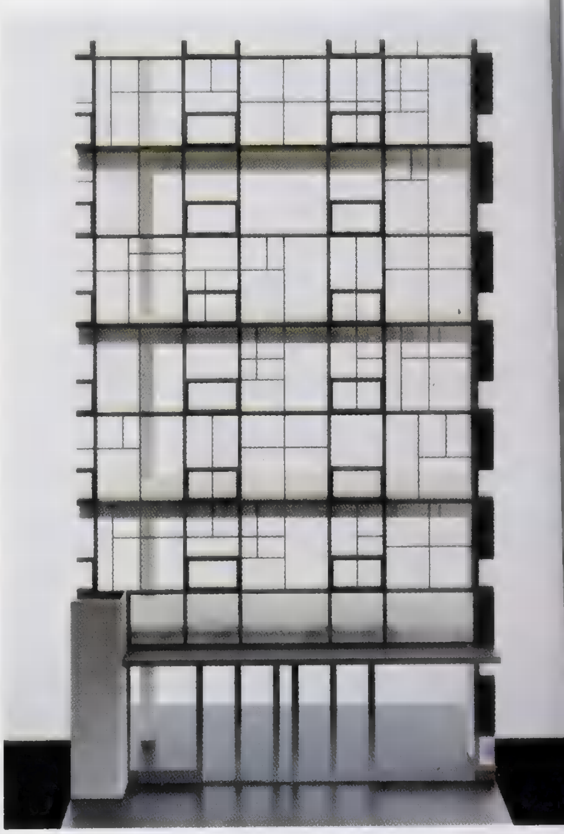
Architects with a mission

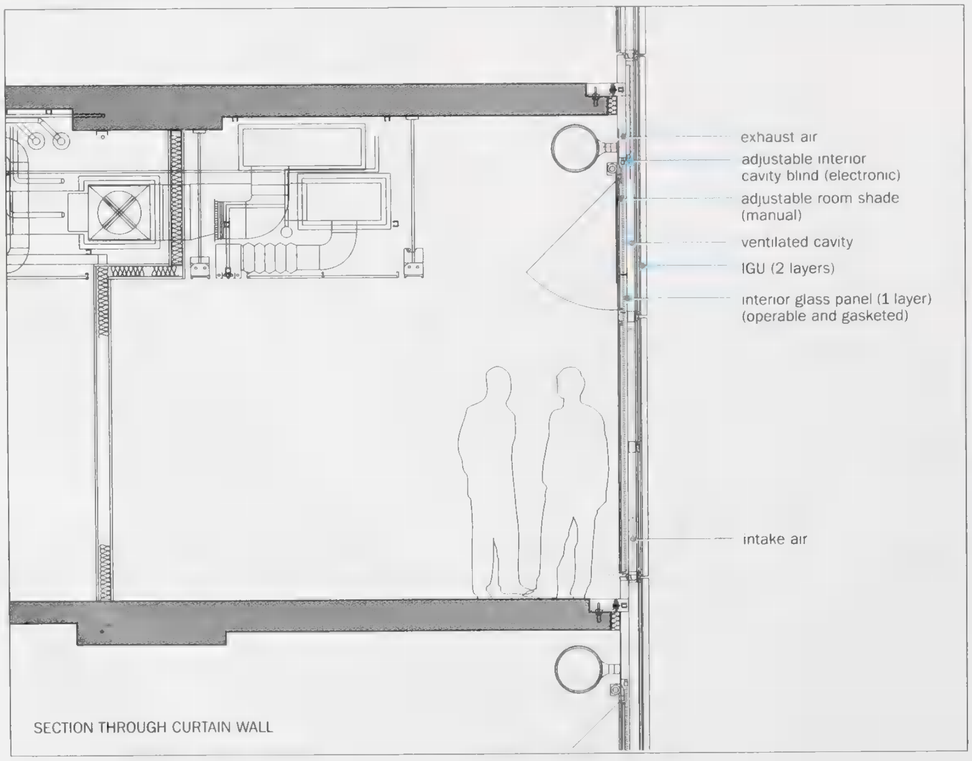
At the 2001 American Institute of Architects (AIA) National Convention in Denver, the College of Fellows of the AIA awarded its first Latrobe Fellowship to Philadelphia architects Stephen Kieran, FAIA, and James Timberlake, FAIA. The grant, named for the architect Benjamin Henry Latrobe, is awarded biennially for research leading to significant advances in the profession of architecture. As recipients of the inaugural award of $50,000, the architects immediately aimed their research at the restrictive



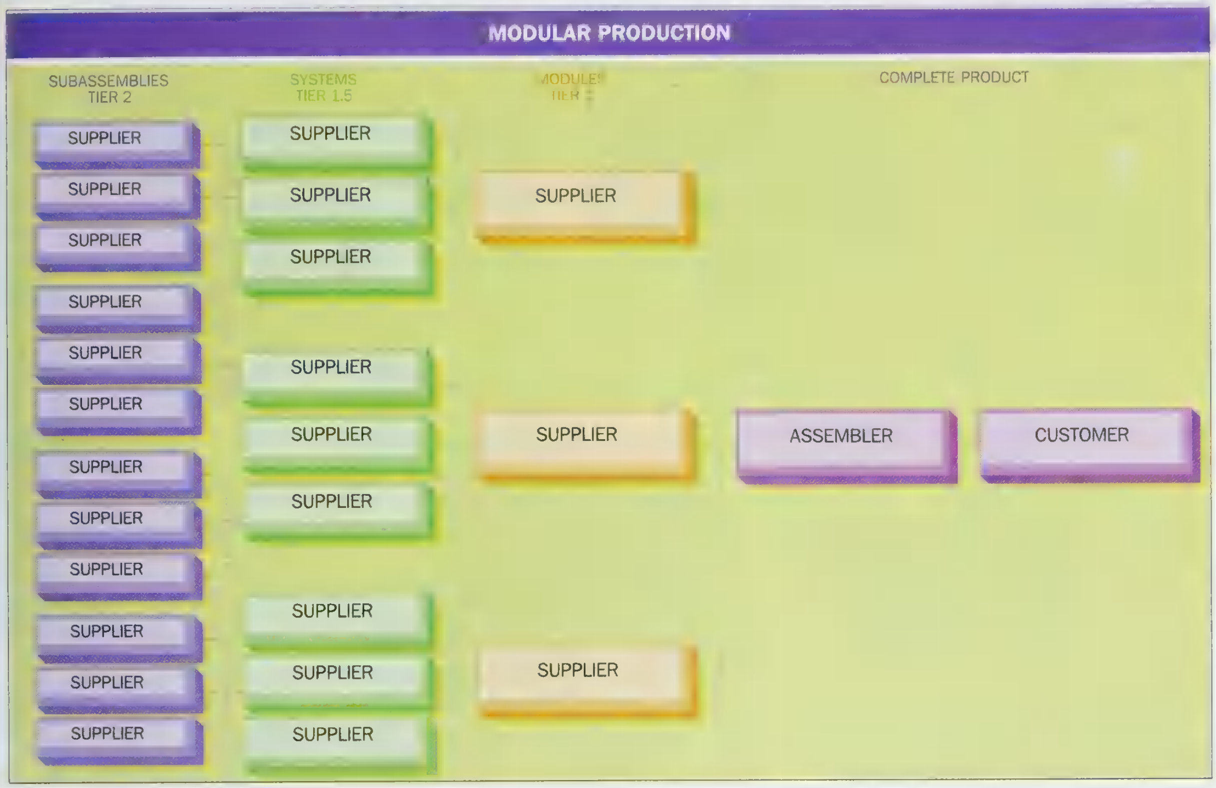
This chart (left) describes the linear process that governs the design and construction of most buildings. Almost all systems are constructed piece by piece in the field. By contrast, in a modular assembly system used by the automotive and aerospace industries (opposite, top), manufacturers use outsourced suppliers to assemble entire modules and deliver them to the factory (or building site) ready to be installed.

The front facade of Levine Hall at the University of Pennsylvania is a ventilated curtain wall system made up of factory-built panels (right and below). The panels arrive on-site fully glazed and finished. Installation is both fast and accurate.




exhaust air
adjustable interior cavity blind (electronic)
adjustable room shade (manual)
ventilated cavity
IGU (2 layers)
interior glass panel (1 layer) (operable and gasketed)
intake air

SECTION THROUGH CURTAIN WALL



For the curtain wall at Levine Hall, Kieran Timberlake Architects chose a modular assembly system. In this particular case, the customer is the university; the assembler is the contractor; the Tier 1 supplier is Permasteelisa, the curtain-wall fabricator; Tier 1.5 suppliers provide the glass, the low-e coatings, and the aluminum extrusions; Tier 2 suppliers provide the interior and exterior coatings, blinds, hardware, and electronic controllers.

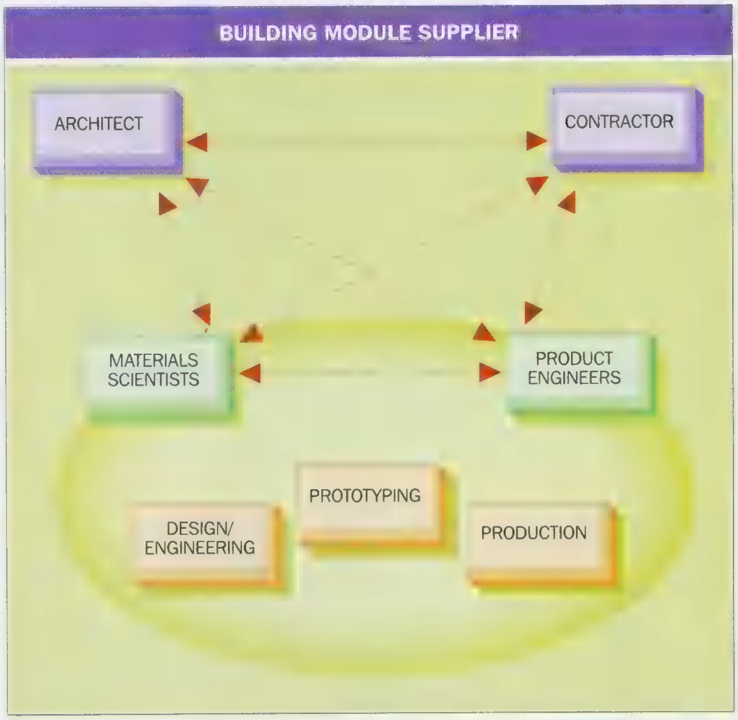
ISSUES IN E-COMMERCE AND PRODUCT DEVELOPMENT, BY PETER O'GRADY AND WEN-CHIEH CHENG (2002)

paradigms that have segregated the four major disciplines critical to the construction process—architecture, construction, materials science, and product engineering. One existing paradigm states that although innovation occurs within each discipline, historically there has been very little collaboration among them. Kieran and Timberlake envision a new model in which all four disciplines share a "collective intelligence."

Since Henry Ford began mass production of the Model-T in 1907, his repetitive and fast assembly-line method has been improved on and mechanized, but the principle remained unchanged until recently. Timberlake, an automobile enthusiast who has researched the industry exhaustively, says that in the mid-1990s market forces pressured American automobile manufacturers to build cars faster and cheaper and, at the same time, to make them better. In short, with the extensive use of computer technology, the automotive industry responded with a modular system of production, whereby the role of suppliers changed from merely delivering parts to the factories to assembling collections of parts—such as doors, dashboards, and HVAC units—off-site and delivering them ready for installation on the assembly line. (See the chart on page 134)

SAVVY CLIENTS ARE LESS ACCEPTING OF THE CONVENTIONAL WISDOM THAT STATES THAT IT TAKES THREE TO FIVE YEARS TO PRODUCE A SUBSTANTIAL NEW BUILDING.

This is no small innovation. Not only has this modular-assembly system produced better quality and allowed for customization, it has reduced the time from concept to release from 58 months a decade ago to 38 months today, and it has reduced labor costs by a third.



What does this have to do with constructing buildings? Plenty, according to Kieran and Timberlake, who have found parallels to the production of automobiles in the design and construction of buildings. In their Latrobe Fellowship proposal (www.latrobefellowship.com), they list the attributes shared by cars and buildings: "affordability, weather-tight construction, economical operation, durability over a reasonable period of time without major repairs, integrated mechanical and electrical systems, and an acceptable level of safety." Building codes, site restrictions, and building-department approvals notwithstanding, the comparison is still convincing when one considers that buildings don't have to travel safely at 60 miles per

CAR AND BUILDING DOOR COMPONENT: SUBASSEMBLIES

Cars, like buildings, are made of components of smaller, separate pieces. Until recently, automobile production involved installing individual parts on an assembly line one at a time. Now, the industry has shifted to a modular system in which the car door, for instance, arrives at the assembly line outfitted with all its elements and ready to be plugged into the car body. Kieran and Timberlake's research suggests that building-door assemblies are programmatically similar to car doors and could be more efficiently produced by a module supplier off-site.

hour, and they don't have to be produced in quantities of 25,000 units to be profitable. And, like the automotive industry, a high percentage of the cost of construction is field labor.

Just as the automotive industry had to respond to the market or perish, architects are beginning to feel the heat from clients who want their buildings delivered faster without additional costs or compromise in quality. In the age of rapid production in almost every other industry, savvy clients are less accepting of the conventional wisdom that states that it takes three to five years to produce a substantial new building. They are also wary of the long-standing equation that quality times scope equals cost times time. In other words, they don't buy the concept that complex, well-constructed buildings cost more money and take considerably longer to build.

KIERAN AND TIMBERLAKE ENVISION A NEW MODEL IN WHICH ALL DISCIPLINES SHARE A "COLLECTIVE INTELLIGENCE."

Research into reality

Kieran and Timberlake's research is solid and their conclusions logical. Buildings, like cars, are made of components, which, in turn, are made of many smaller elements. If a car door can arrive at the factory completely outfitted with steel exterior, fabric interior, locks, speakers, glass, and controls, then why can't a building door arrive at the construction site with its hardware, automatic or mechanical closer, weather seals, security apparatus, exit light, alarm, and signage assembled? The same is true of other building elements, especially if they are considered systems, or in the language of Kieran and Timberlake, "modular building assemblies." To date, the architects have taken their research from a theoretical framework to a real building—the Melvin and Claire Levine Hall at the University of Pennsylvania. Currently under construction and expected to be com-

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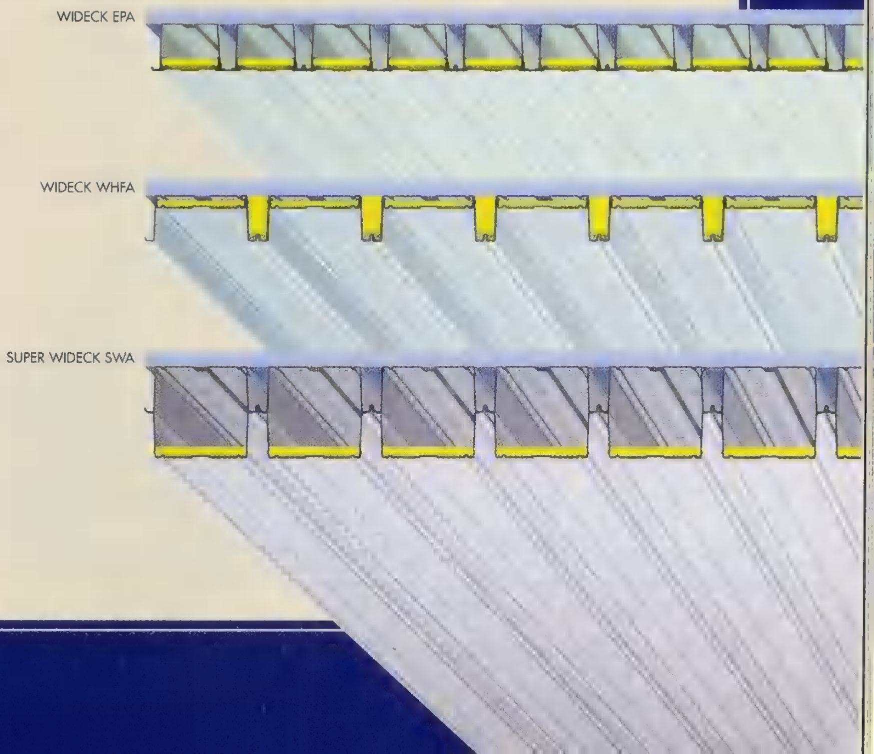
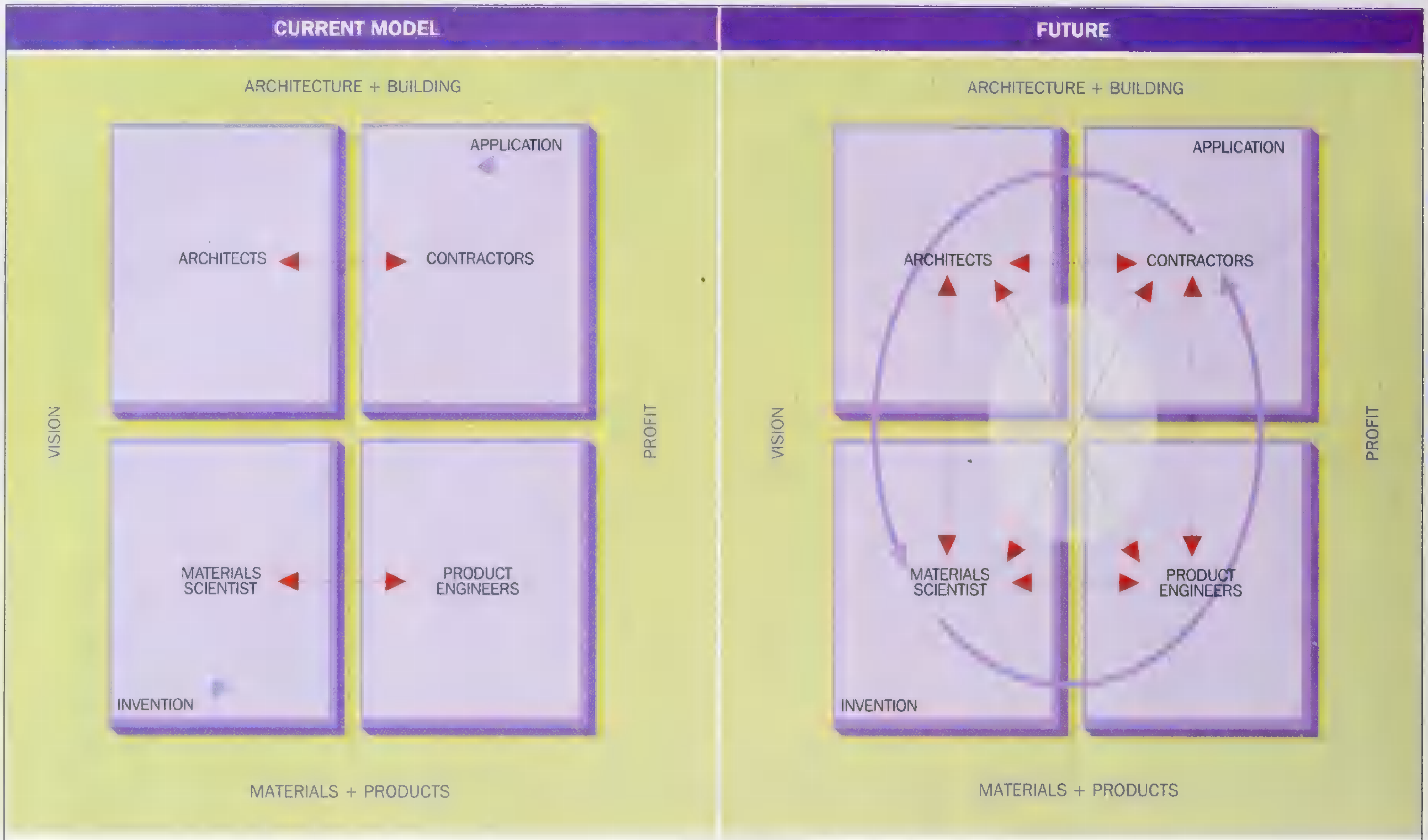




The diagram on the left shows how even in a design-build or fast-track project, the design and construction process is still achieved laterally. In their research, Kieran and Timberlake argue that there is a need for a more fluid process with more direct contributions from product engineers, suppliers, and even materials scientists. The diagram on the right shows a more integrated design model in which the old equation of "quality times scope equals cost times time" would no longer be the operative paradigm.

CHART COURTESY KIERAN TIMBERLAKE ASSOCIATES

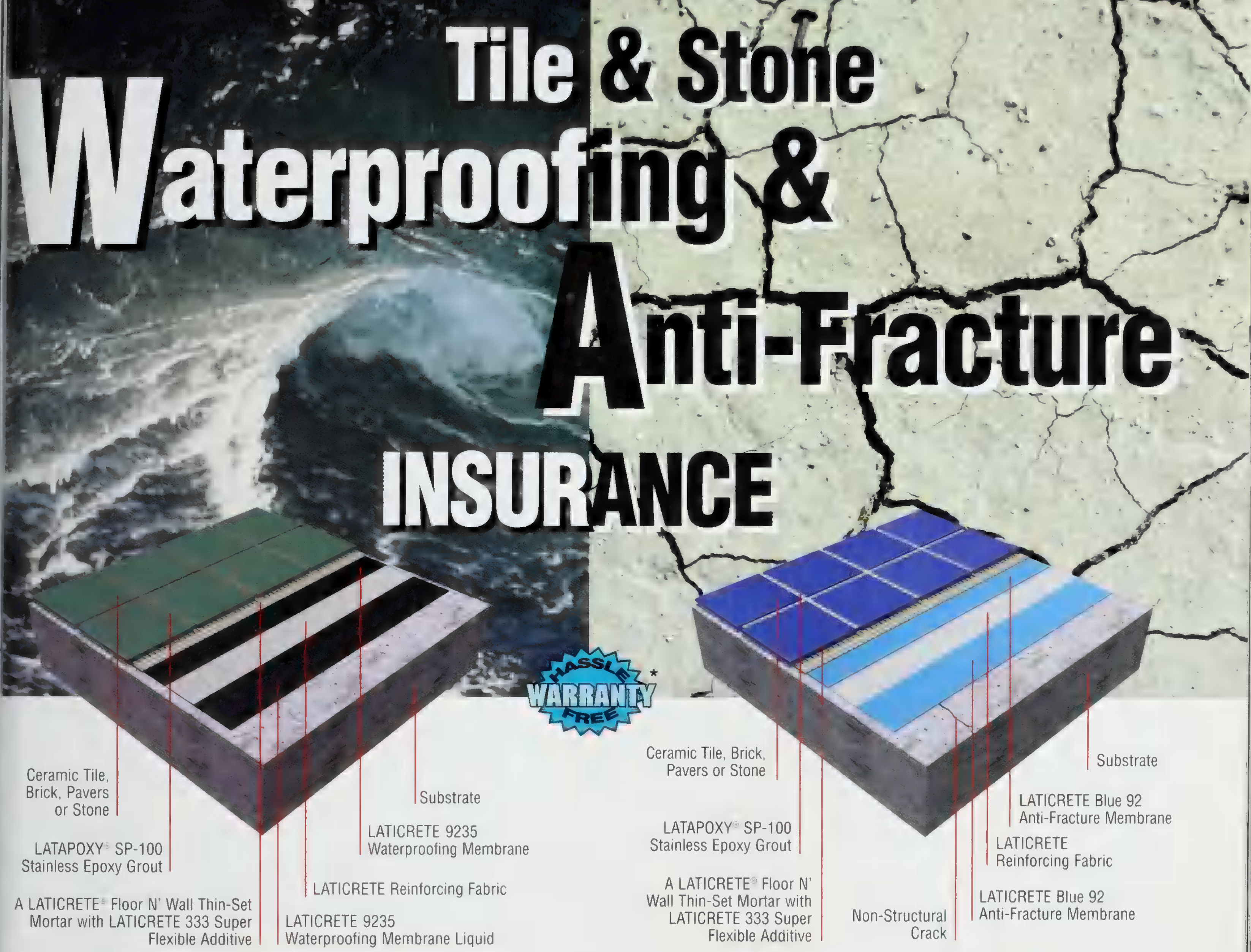
pleted this spring, the 40,000-square-foot glazed pavilion will contain offices, laboratories, meeting rooms, and an auditorium for the School of Engineering and Applied Sciences.

While the structure and the floor plates are a conventional post-tensioned concrete system, the architects conceived the curtain wall as a modular building assembly. Their search for a fabricator who could achieve this led them out of the U.S. to the Permasteelisa Company in Veneto, Italy. (Permasteelisa fabricated the modular titanium panels for Frank Gehry's Guggenheim Museum in Bilbao and the double-glazed curtain wall at Galeries Lafayette in Berlin by Jean Nouvel.) Like a car door, the Permasteelisa curtain wall is comprised of panels that are assembled in the factory of separate components—in this case, an external, pressure-equalized, double-glazed unit; an internal, single-glazed unit; and a mechanically ventilated cavity with continual air flow supplied by room air from an inlet at the base that exits through an outlet at the head of the glazing frame. Because fabrication in a controlled environment can be extremely precise and yield small tolerances, coordination of concrete pours, inserts, and attachments with the base building is critical. Yet, the curtain wall drives the coordination. Permasteelisa provides full-scale shop drawings that show every component the company is providing as well as details of how the panels will interface with the structure. When completed, the panels will be shipped to Philadelphia and anchored to the structure.

THE CURTAIN WALL IS COMPRISED OF PANELS THAT ARE ASSEMBLED IN THE FACTORY FROM SEPARATE COMPONENTS.

Project architect Richard Maimon, AIA, identifies the curtain wall as "unitized construction" to differentiate it from the conventional "stick-built." "Unitized construction allows more work to be done at the shop, offering a higher level of quality and precision. Unitized, modularized, or componentized construction is a direct transfer from the automobile, aerospace, and shipbuilding industries," explains Maimon. The higher level of quality means that the joints are tighter, which means the risk of moisture penetration is lower, which, in turn, means reduced liability for the architect and contractor. The curtain wall at Levine Hall will have only four field joints, as opposed to dozens had it been stick-built, giving the architect reason to anticipate a short punch list.

The economic value of unitized construction must be reckoned in terms of first costs versus long-term costs. "When clients, such as institutions, weigh the value of the system over the life span of the building, unitized systems come out ahead," explains Timberlake. From an operational and energy-use perspective, the client can expect a 15 to 20 percent savings over the life of the building.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Brave new world of building

There's nothing like a successful project in the real world to turn hypothesis into fact and validate one's research. Levine Hall is only one, relatively small success story for technology transfer and an integrated approach to design, but Kieran and Timberlake's research will no doubt yield more. To verify the proper direction of their research, they are organizing a symposium this fall through the auspices of the Graduate School of Fine Arts at the University of Pennsylvania, where they also conduct a Master's Research Laboratory.

> **FROM AN OPERATIONAL AND ENERGY-USE PERSPECTIVE, THE CLIENT CAN EXPECT A 15 TO 20 PERCENT SAVINGS OVER THE LIFE OF THE BUILDING.**

The revelation alone that the automotive and aerospace industries have successfully exploited developments in information technology, computer-aided design (CAD), and fabrication techniques to provide more scope or higher quality in less time and for less money should, at the very least, inspire the architecture profession to critique its self-imposed boundaries. As Timberlake acknowledges, "We have to start thinking like everybody else."■

Spinoffs from NASA for architects

Fabric Structures. During the Apollo program, NASA searched for a durable, noncombustible material for space suits that was also thin, lightweight, and flexible. At the time, Owens-Corning was developing a glass-fiber yarn, which it wove into a fabric and then coated with Teflon for strength, durability, and hydrophobicity (the ability to repel moisture). A heavier version is now used to cover shopping malls and stadiums. Space-based fabric reduces lighting needs, and its reflectivity lowers cooling costs. **Flat Cable.** To make aircraft and spacecraft more compact, NASA devised space-saving, weight-shaving measures. One such measure is the use of extremely thin flat wires known as flat conductor cable (FCC). Only as thick as a credit card, FCC dramatically reduces the space occupied by the many miles of power lines in aerospace vehicles. A consortium of manufacturers pooled their resources to develop complete FCC systems, which encompass not only the cable but the sheathing, connectors, tools, and other equipment needed to facilitate FCC use by designers and builders.

Source: "The Best of NASA's Spinoffs," from Spinoff *magazine (vesuvius.jsc.nasa.gov/er/seh/spinoff.html#BEST)*

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- **Read the article "New Ways to Build Better, Faster, Cheaper" using the learning objectives provided.**
- **Complete the questions below, then fill in your answers (page 178).**
- **Fill out and submit the AIA/CES education reporting form (page 178) or download the form at www.architecturalrecord.com to receive one AIA learning unit.**

QUESTIONS

1. Which of these attributes is shared by cars and buildings?
  a. building department approvals
  b. travels safely at 60 mph
  c. integrated mechanical and electrical systems
  d. produced in quantities of 25,000 units to be profitable

2. Savvy architectural clients expect which of their buildings?
  a. they will take 3 to 5 years to produce
  b. cost times time equals quality
  c. faster delivery without additional costs
  d. complex, well-constructed buildings take longer to build

3. Unitized construction is a direct transfer from which industry?
  a. aerospace
  b. automobile
  c. shipbuilding
  d. all of the above

4. Unitized construction of a curtain wall versus stick-built would result in which?
  a. more field joints
  b. fewer field joints
  c. looser joints
  d. higher operational energy use

5. The economic value of unitized construction is recognized in which?
  a. lower initial costs
  b. lower retooling costs
  c. lower life-span costs
  d. lower maintenance costs

6. In the Levine Hall glazed pavilion, which is not true of the curtain-wall construction?
  a. the curtain wall is made of components
  b. the concrete pours and attachments drive the coordination
  c. the curtain wall drives the coordination
  d. fabrication is precise

7. Which is an example of technology transfer?
  a. when aerospace technology is published in scientific journals
  b. universities paying royalties for automotive research
  c. licensing of medical devices for use in hospitals
  d. passing information from one specialized industry to another for use by a larger commercial base

8. The goal of Kieran and Timberlake was which?
  a. to segregate the four disciplines of architecture, construction, materials science, and product engineering
  b. to have the four disciplines achieve a collective intelligence
  c. to develop innovation within each discipline separately
  d. to develop research only in the discipline of architecture

9. In order to produce cars faster and cheaper, the automobile industry did which?
  a. sped up the assembly line
  b. hired more workers
  c. used a modular system of production
  d. changed suppliers

10. Fabrics developed for space suits offer which for building use?
  a. high strength with light weight
  b. increased energy consumption
  c. increased lighting needs
  d. heaver weight than steel

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Digital Architect

From atelier to e-telier: virtual design studios

By Jerry Laiserin, FAIA

The design studio, as physical place and pedagogical method, is the core of architectural education. Ateliers clustered around rue Napoleon in Paris defined the École des Beaux Arts. The Carnegie Endowment report on architectural education, published in 1996, identified a comparably central role for studios in schools today. From programs, schemes, and *parti* to desk crits, pin-ups, and charrettes—language and behavior learned in the studio establish the profession's cultural framework.

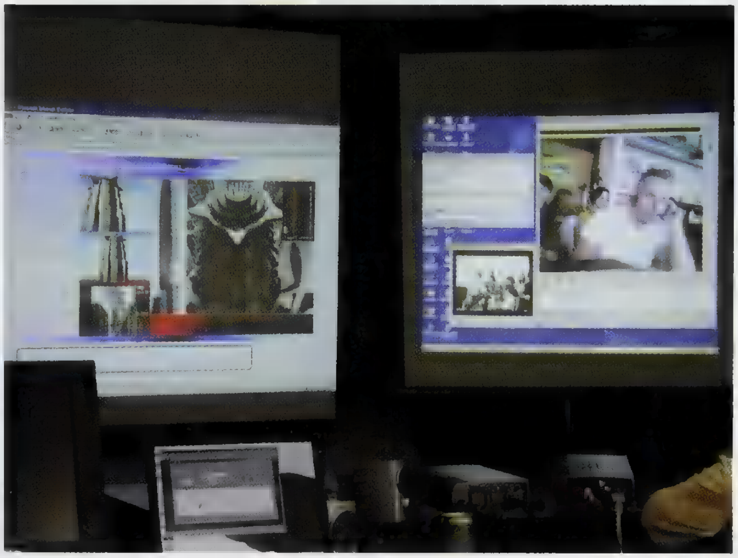
Advances in CAD and visualization, combined with technologies to communicate images, data, and "live" action, now enable virtual dimensions of studio experience. Students no longer need gather at the same time and place to tackle the same design problem. Critics can comment over the network or by e-mail, and distinguished jurors can make virtual visits without being in the same room as the pin-up—if there is a pin-up (or a room).

Virtual design studios (VDS) have the potential to favor collaboration over competition, diversify student experiences, and redistribute the intellectual resources of architectural education across geographic and socioeconomic divisions. The catch is predicting whether VDS will isolate students from a sense of place and materiality, or if it will provide future architects the tools to reconcile communication environments and physical space.

With a little help from my friends

While shuttling between Harvard and MIT on Boston's MTA Red Line subway during the 1980s, William J. Mitchell, FRAIA, now dean of architecture and urban planning at MIT, mused that the network linking the two schools' computer systems served as an "electronic Red Line." By the early 1990s, former students, collaborators, and admirers of Mitchell began establishing transcontinental and transoceanic "Red Lines," inventing the ground rules for electronically mediated studios as they went along. From 1995 to 1997, a watershed in VDS evolution occurred in the academy, with publication of experiences in overlapping studios among the universities of Sydney, Tasmania, and Queensland in Australia; University of British Columbia (UBC); Hong Kong (UHK), Kumamoto, and Kyoto universities in Japan; MIT; the National University of Singapore; Washington University in St. Louis; and the Technical University (ETH) of Zurich, among others.

In 1997, Mary Lou Maher, Simeon Simoff, and Anna Cicognani wrote a landmark paper and subsequent monograph, *Understanding Virtual Design Studios* (Springer-Verlag, 1999), on VDS experiences at the Key Centre for Design Computing, Faculty of Architecture, University of Sydney. According to Dr. Simoff, who's now at the University of Technology Sydney, VDS makes "the location of designers irrelevant ... because the workspace of the studio is distributed across the net. Designers are able to enter the studio for interactive and non-interactive sessions connecting to the World Wide Web, multimedia mailers, and/or connecting to a video conferencing session."



Architecture student Tom Carajevski at the University of British Columbia presents his design proposal to a critic at Kumamoto University in Japan.

PHOTOGRAPHY COURTESY DR. JERZY WOJTOWICZ

The design collaboration may be single-task, in which each participant "has his own view over the whole design problem, and the shared conception is developed by the 'superposition' of the views of all participants," or multiple-task, in which "the design problem is divided among the participants in a way that each person is responsible for a particular portion of the design."

Similarly, communication may be synchronous, implying "the simultaneous presence and participation of all designers involved in the collaboration," or asynchronous, in which "designers may work at different times, often on different parts of the design, and do not require the simultaneous presence of all team members." Asynchronous communication has modest technical needs—typically e-mail and file transfer protocol (FTP)—while synchronous communication imposes high bandwidth and technology requirements for video conferencing, shared electronic whiteboards, and specialized groupware.

Simoff observes that an ideal shared design representation for VDS "would incorporate the designers' goals, descriptions, reasoning paths in their design steps, partial solutions to the design task, design communications, and information exchange." But he notes that no

Contributing editor Jerry Laiserin, FAIA, provides strategic consulting services to architects and their technology providers.

WWW For more information on technology for architects, including reviews, vendor lists, and links, go to Digital Architect at **www.architecturalrecord.com**

CAD system or interoperability scheme among CAD systems currently supports all these data. Therefore, the typical VDS employs an informal hypermedia approach, presenting information as text, tables, images, 3D models, animated images, and Web links to other information.

When implementing these principles, Nancy Yen-Wen Cheng, AIA, who taught at UHK during the mid-1990s when VDS took root there, favors structuring well-defined tasks and interactions "because of the difficulty of a true artistic collaboration between people who have never met." In local projects at the University of Oregon, where she now teaches, Cheng observes, "Where students can supplement mediated communication with face-to-face talk, they see their contributions become part of a useful repository." In remote projects, such as a recent collaboration with the University of Stuttgart, "students see that though their distant peers may have different values and approaches to design, many fundamental aspects of the design process are unchanged around the world. The enlarged pool of students involved [in a VDS] allows us to identify different models of excellence. While face-to-face interaction is more direct for conveying complex aspects of architecture and urban design, even through the haze of the mediated connection we get to glimpse a wider world."

At UBC, Dr. Jerzy Wojtowicz has been involved in VDS technology since its inception and finds it "no longer a big deal." In a recent collaboration between UBC and Kumamoto University, remote faculty critiqued student work synchronously—via Microsoft NetMeeting, Cornell University's CUseeMe, and Moro Lab's Group Work CAD (GW-CAD, developed by Professor Mitsuo Morozumi at Kumamoto)—and asynchronously with design software from Abvent (Art•lantis), Adobe (Photoshop, Flash), Alias|Wavefront (Maya), Autodesk (AutoCAD), auto•des•sys (form•Z), Graphisoft (ArchiCAD), and Nemetschek (VectorWorks).

Wish you were here

The Las Americas VDS spans Texas A&M and universities in Mexico, Argentina, and Chile, and combines lessons learned from other VDS with some new twists. Like Cheng, "Aggie" assistant professor Guillermo Vásquez de Velasco believes the cross-cultural nature of VDS promotes questioning "the hundreds of default design decisions that our students make during a semester. People with different backgrounds will do things differently, and it is from that diversity of experiences that the students can learn that every decision in the design process is an opportunity waiting to be used. The virtual design studio also is important as we train our students for a global marketplace." Like Wojtowicz's students at UBC, Texas A&M students can use VDS-specific tools, including "electronic pin-up" programs that allow the same Photoshop image files to be plotted out for real pin-ups and published simultaneously in HTML format for virtual pin-ups on the Web, without duplicate effort.

Dr. Vásquez de Velasco's innovation in VDS is the Infinity Room (see illustrations below), which creates the illusion that studios hundreds or thousands of miles apart are just opposite halves of the same room. This logical extension of VDS technology into the realm of simulation or telepresence increases psychological engagement in the same way as "dissolving the fourth wall" does in the theater.

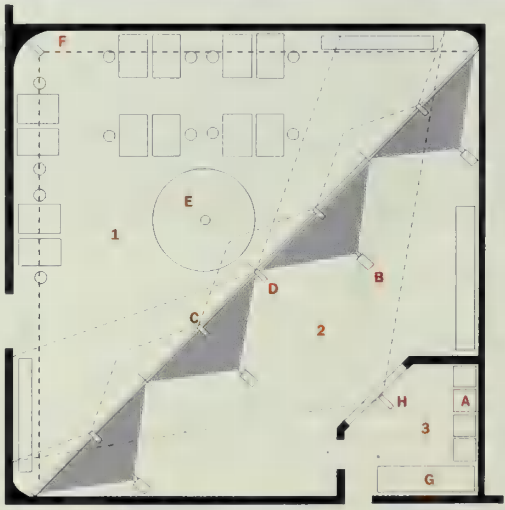
Toward a virtual architecture

Media guru Marshall McLuhan once noted that new media take their initial content from the media they replace. The first motion pictures were filmed stage plays; the first television broadcasts were radio programs with pictures. But new media eventually develop their own forms, processes, and content—an evolutionary phase that VDS technology is just now entering.

Jim Davidson, AIA, taught at UBC during the school's mid-1990s VDS work, moved on to the epicenter of virtual reality research at the University of Washington's Human Interface Technology Lab, and then moved on to Microsoft and independent consultancy D'Art, Inc. In response to "the nonphysical, placeless, and nontemporal character of the medium of collaboration," Davidson believes VDS is essential to "helping students understand when our communications—verbal, written, or graphic—are media-dependent and when they are not."

Some of the most advanced exploration of media dependence in design communication and its implications for architectural form and program has been ongoing at ETH in Zurich, initially under the direction of Gerhard Schmitt and now under Maia Engeli. ETH defines its use of VDS technology as a platform for creating a new hybrid of virtual and physical architecture for 2010 and beyond—an architecture as much about chips, sensors, and adaptive building behavior as about commodity, firmness, and delight. The role of the studio thus will come full circle: As the hand-rendered communication media of the original ateliers shaped the architecture of the Beaux Arts age, the virtual media of the e-telier will shape a new architecture of the digital age. ■

The Infinity Room involves building studios in different locations (plan, right) equipped with floor-to-ceiling rear-projection screens, computers, and video equipment to create life-size images.



1. *Studio*
2. *Equipment room*
3. *Control room*

A. *Computers for image compression*
B. *Video projectors*
C. *Wide-angle camera*
D. *Main studio camera*
E. *Ceiling camera*
F. *Feedback camera*
G. *Audio/VCR*
H. *Future location of main camera*

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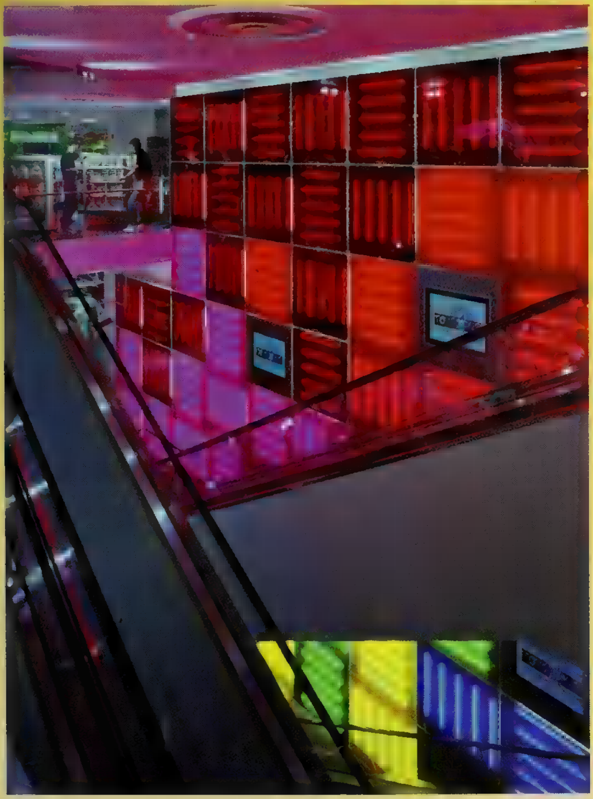

PHOTOGRAPHY: © PETER PAIGE

There are dozens, perhaps even hundreds, of opportunities to learn about lighting every year. I don't often take the trouble of plugging most of them, because they are about technology: lamps, ballasts, fixtures—basically, hardware and "the numbers." Those topics are important and they have their place, but most design professionals who do not specialize in lighting per se are looking for something different. They're not interested in finding out how to usurp the place of their lighting consultants. Rather, they want to learn how to complement them better and to create architecture that provides opportune settings for high-quality lighting. Now there is a new chance to learn: in the Architectural Lighting Master Classes at John Jay College in New York City, which will be offered February 21 and 22. The classes are being produced by Sonny Sonnenfeld, who has been putting on the Broadway Lighting Master Classes for several years. The courses are being coordinated by Paul Gregory of Focus Lighting, New York City, and Jonathan Spiers of Jonathan Spiers Associates, Edinburgh, Scotland. Both designers have had projects in the RECORD Lighting section. Paul's lighting of the Toys "R" Us flagship store (photo, left) appears in this issue. The faculty will also include Howard Brandston, perhaps best known for his masterful lighting of the Statue of Liberty; Ken Billington, a theatrical lighting designer with over 80 Broadway and 50 Off-Broadway shows to his credit; and Dr. Alan Lewis, who has written about physiological optics, lighting and vision performance, ergonomics, and color vision, among other vision-related topics. Together they will present two days of classes covering creativity and inspiration; maintaining the competitive edge; coordinating architectural and lighting design; tools of the trade and how to use them; and presentation techniques. AIA members receive 16 learning units for attending both sessions and a tuition discount. Details can be obtained by sending an e-mail to e.almc_nyc@hotmail.com or calling the Architectural Lighting Master Classes at 212/769-2751. *Charles Linn, AIA*

149 Creative uses
150 Nordic Light Hotel, Stockholm
Ljusarkitektur P&O
158 Toys "R" Us, New York City
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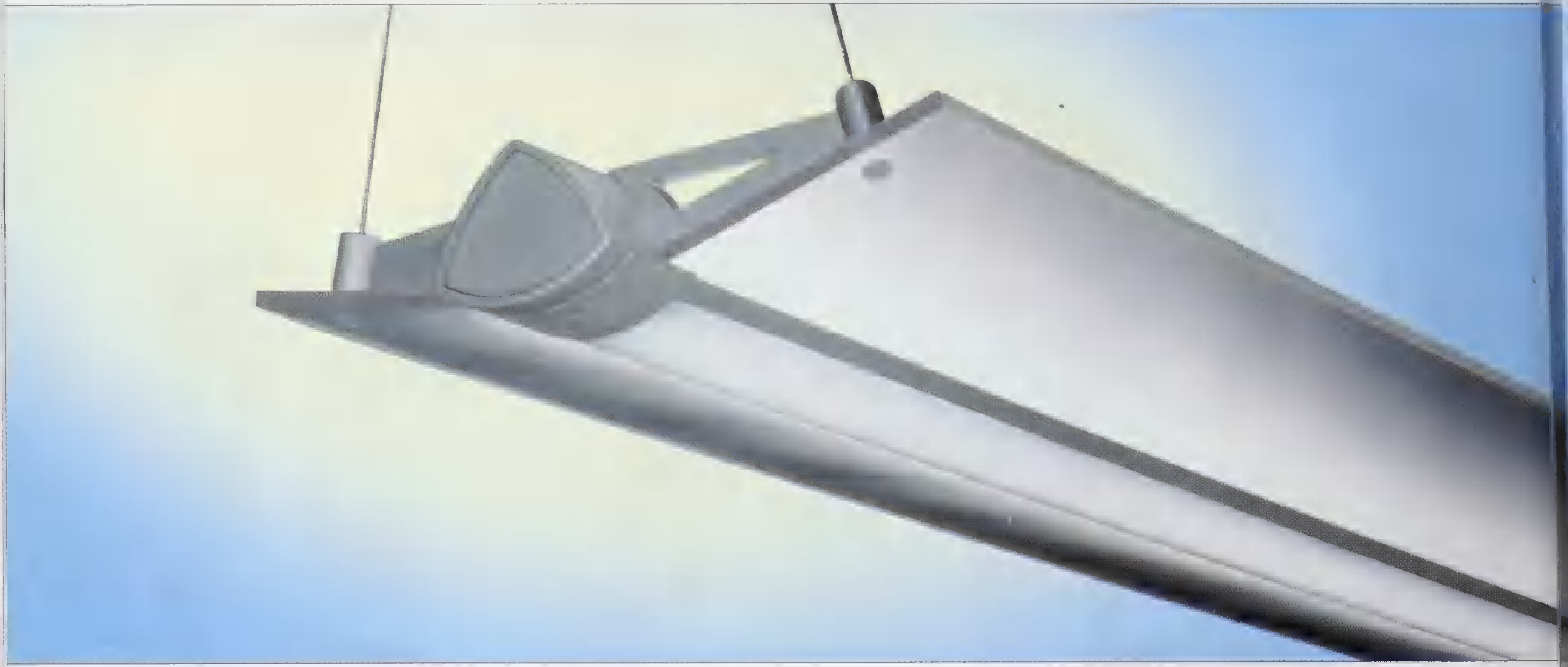

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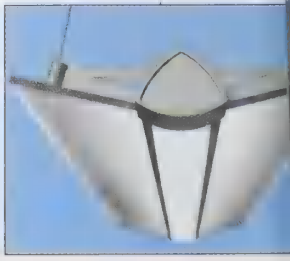

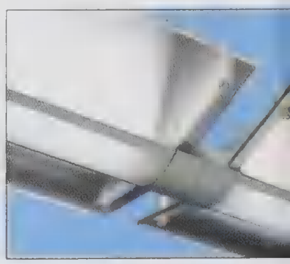

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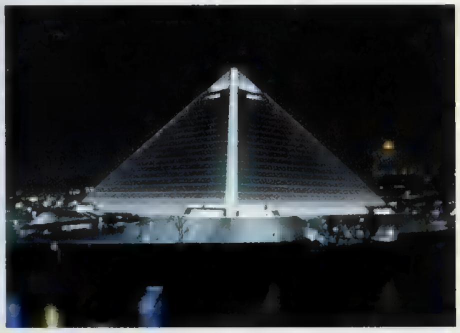
Ross De Alessi does a magic trick that even David Copperfield would admire

MEMPHIS: A city with plans for a grand urban-lighting scheme

How can one appear to have lit an entire downtown, only to make the lighting disappear again? Lighting designer Ross De Alessi, of Ross De Alessi Lighting Design, did just that in order to create a presentation for an extensive proposal to illuminate Memphis's downtown.

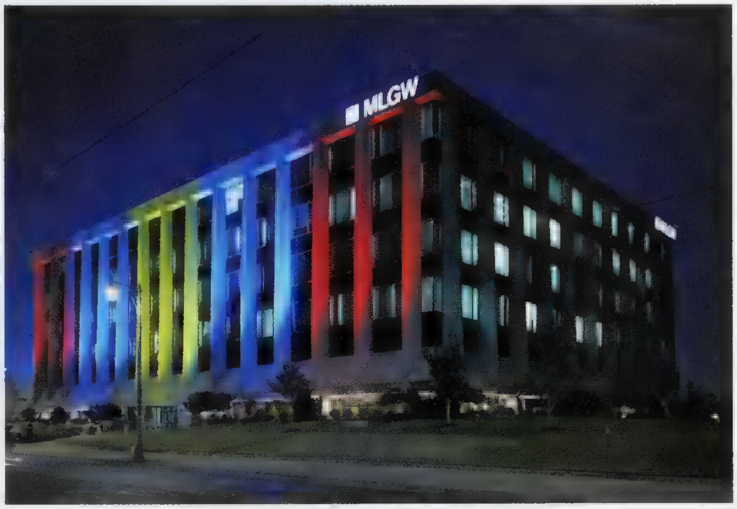
The lighting project started in 1999 when a group of citizens led by the entrepreneurial Kristi Jernigan, the founder of Memphis's Triple-A baseball team, the Redbirds, began looking for a visionary project that would make a significant impact on the city during the Year 2000 and after. Since 1976, the City of Memphis had labored to improve the beleaguered Central Business District, starting at Peabody Place, and the historic Beale Street District to the south, leading to the Pinch Historic District, where the Pyramid Arena is located, to the north. One thing all these areas still lacked was a cohesive lighting plan.



Proposed lighting for the Pyramid Arena.

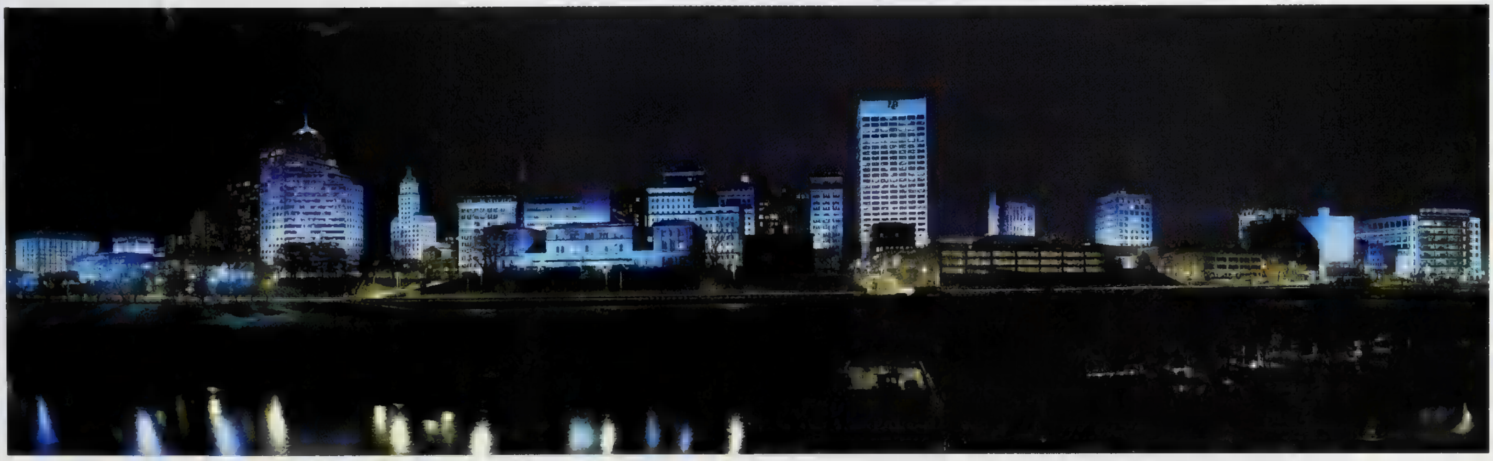
The Memphis UrbanArt Commission formed a strategic partnership with the City Center Commission to create "Light It Up: the Downtown Illumination Project." Sponsors were Memphis Light, Gas, and Water; the Tennessee Valley Authority; Shelby County; the City of Memphis; and the Memphis Chamber of Commerce.

After a nationwide search, the Light It Up Committee asked De Alessi's firm to create a master plan. The firm is no stranger to the task, having previously executed examples in Helsinki, Cleveland, and Seattle. Their approach to lighting downtown Memphis would utilize the accenting and floodlighting of important buildings—a typical strategy—but with something more. De Alessi felt the lighting must engage the movement and imagery of the mighty Mississippi. The culture of the river is deeply rooted in the city. Its location midway between New Orleans and the Ohio Valley had ensured its importance as a trading center. Before that, its position atop a high bluff inspired the Spanish and French to build forts there.



A lighting mock-up for the Memphis Light and Gas and Water headquarters.

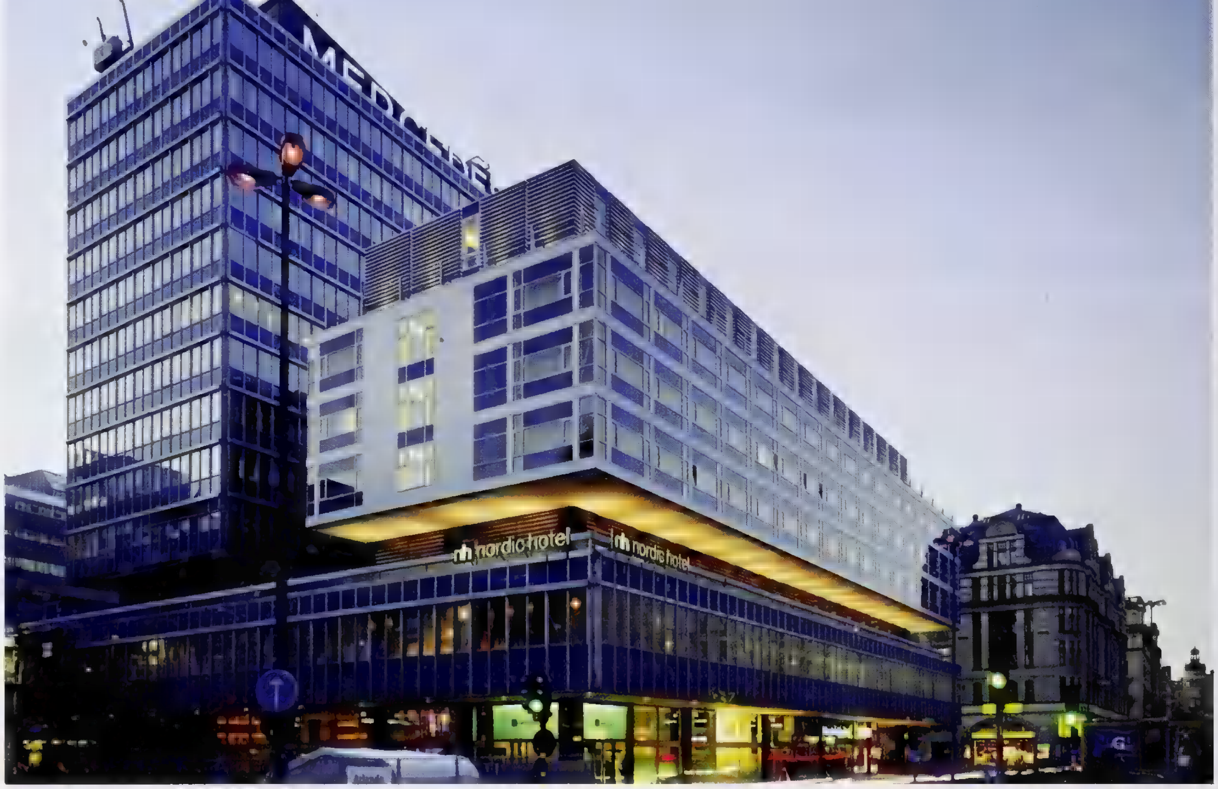
The city's west-facing vista, as it is viewed from the river, is of paramount importance, and illustrating what it would look like to the committee would be difficult. Enter De Alessi the magician. He stationed himself across the river with a large-format camera and took photographs while a crew, led by project manager Trish Connor, commanded a big truck with light-blue floodlights and lit each building temporarily. The entire Memphis skyline was lit, bit by bit, in a single evening and then returned to darkness. The photographs were combined to produce a panorama (below). To visually anchor the floodlit buildings to the plane of the river's surface, De Alessi proposed lighting the cobblestone levees on the banks of the river. The blue lighting would also be animated, moving in waves over the facades of the buildings to mimic the flow of the river. In addition to lighting significant Memphis buildings, the plan will light the Pinch Historic District, the South Main Art District, and the Central Business District. *Charles Linn, AIA*



This composite view of what could become Memphis's new illuminated skyline was taken by Ross De Alessi from the west, across the Mississippi River.

PHOTOGRAPHY: © ROSS DE ALESSI

The base of the hotel's guest-room tower is illuminated with compact fluorescents, adding to its floating appearance (right). Theatrical luminaires graze the glass wall of the facade (below), with clear and translucent sections emitting a varied glow.



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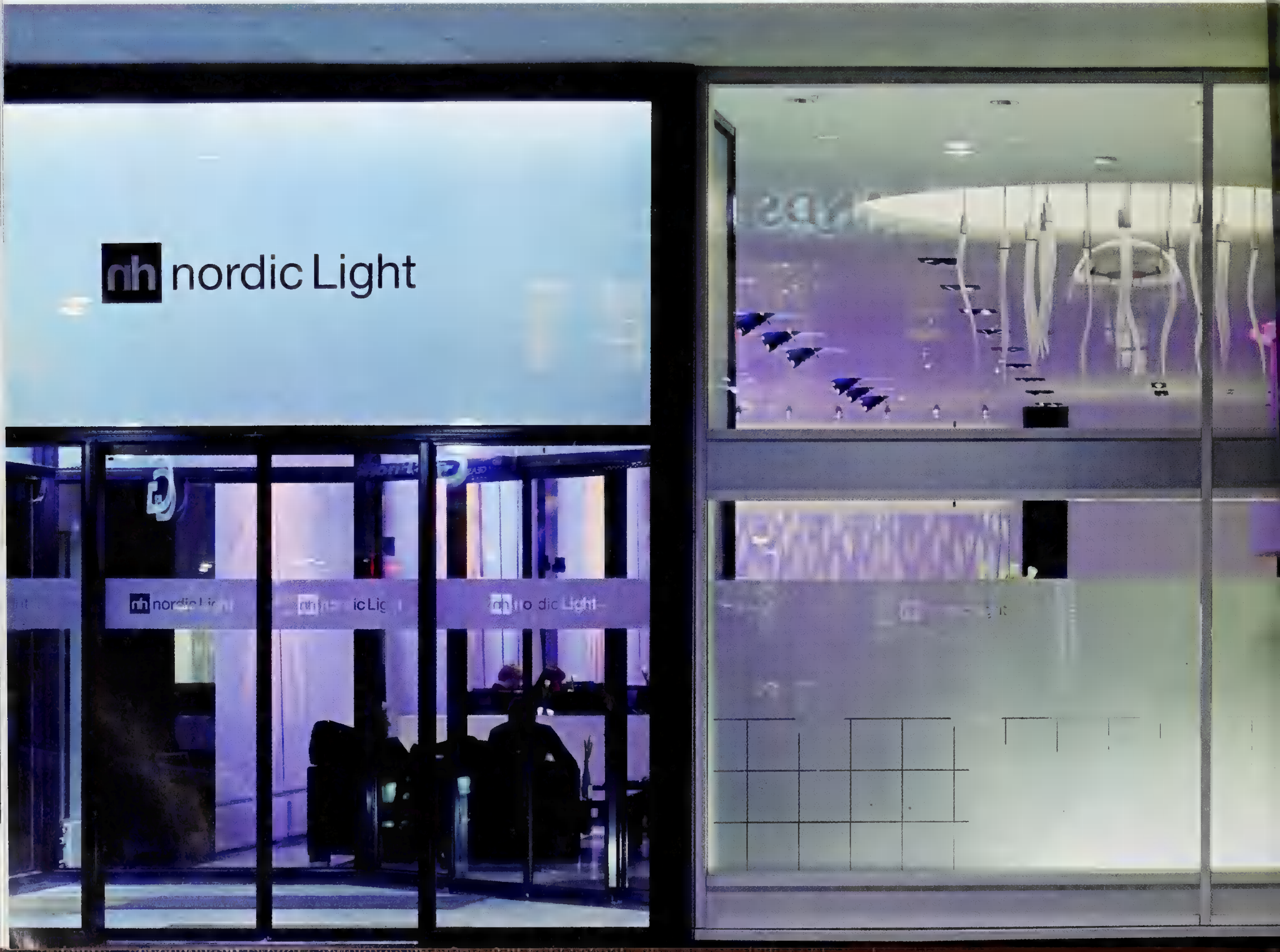


Adapting the boutique hotel aesthetic to Stockholm, designers wash interiors with a paint box of light

By William Weathersby, Jr.

In Stockholm, Sweden, two new sister hotels embrace the essential elements of water and light. The adjacent Nordic Sea and Nordic Light hotels anchor a reconfigured civic square, the Vasaplan, which fronts the Central Station rail-transit complex. While the Nordic Sea features a nautical theme—with an oversize lobby aquarium, blue upholstery, and cherry wood surfaces that would seem at home aboard a ship—the Nordic Light presents a spare, abstract landscape whose compass points are harder to plot. Interior planes and materials within a stark palette of black, white, and gray form the backdrop for a changing play of light and color.

Contributing editor William Weathersby, Jr., is a writer based in Westport, Conn. He coordinates lighting coverage for ARCHITECTURAL RECORD.

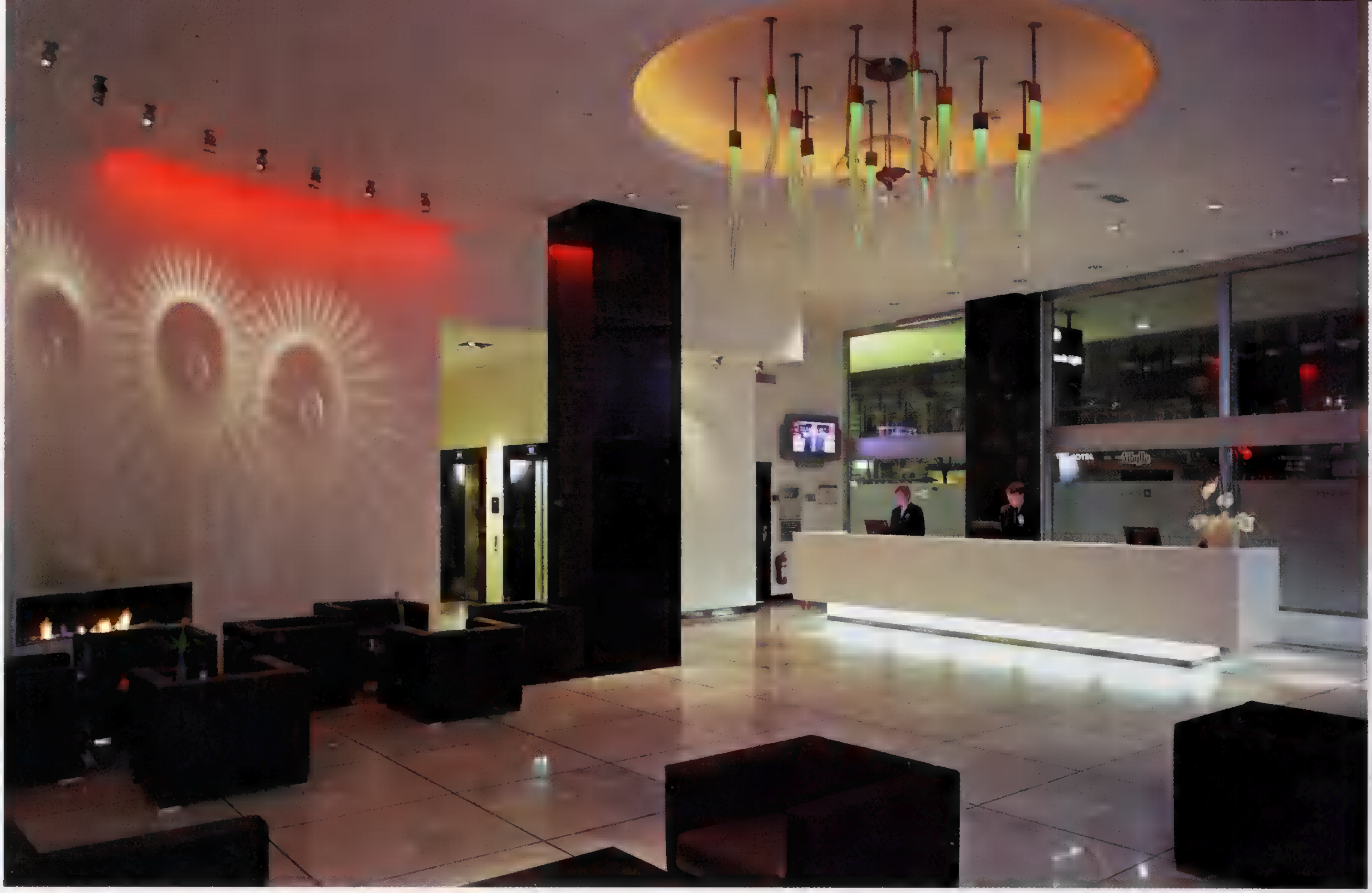
"Daily periods of sunlight range from 6 to 19 hours throughout the year here, so Swedes are very attuned to changes in weather and natural light," says principal lighting designer Kai Piippo of Ljusarkitektur P&Ö. "Within the Nordic Light, we wanted to use electric illumination to abstractly evoke the many facets of this mercurial Scandinavian quality of light." Patterns projected upon the walls of the public spaces—including sunbursts, streaks from a rainbow, and flames of fire—slowly change throughout the day to recast the ambience of public spaces, enveloping guests with an atmospheric glow.

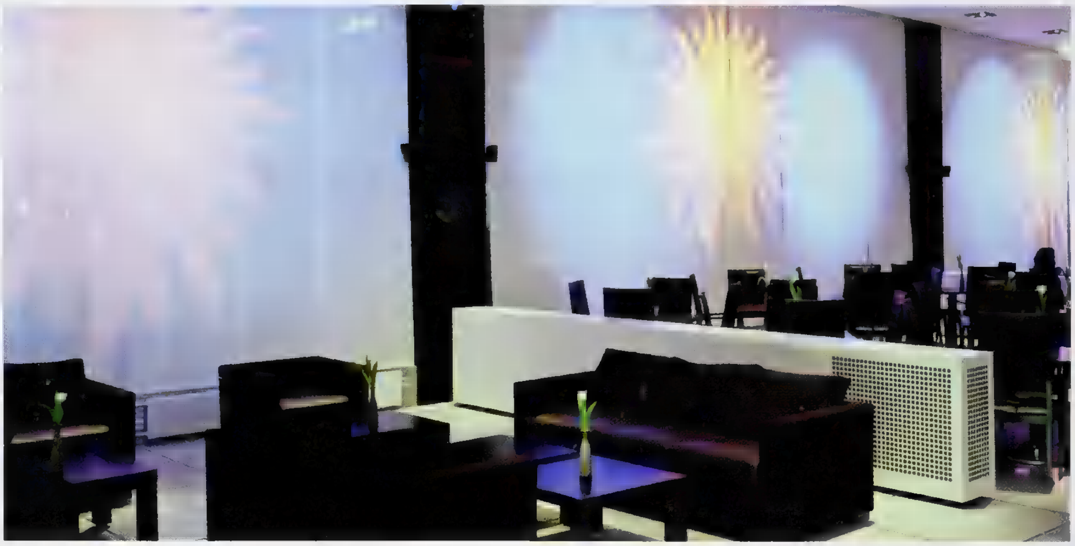
While the 367-room Nordic Sea was carved from an existing police station, the Nordic Light adaptively reuses part of an existing office building, long the site of a regional Mercedes corporate headquarters. A new six-floor wing housing 175 hotel guest rooms was added atop the three-story base of the building. Collaborating with interior designers Jan Söder and Lars Phil (who for many years worked, respectively, as a photographer and art director), Piippo mapped out an extensive lighting plan that employs fixtures incorporating theatrical, architectural, and art-glass modes. "The interior surfaces and Modernist furnishings are rather austere, in direct contrast to the more traditional Nordic Sea," Piippo says. "Light is a major component leading guests through the space and affecting their perception of the surroundings."

PLAYING OFF BLACK-AND-WHITE PLANES, COLORFUL ILLUMINATION DEFINES SPACE AND MOOD. THE FACES OF GUESTS GLOW.

On the ground floor, the glass-wall facade allows daylight to flood the entrance from morning until dusk on sunny days. Sections of the window wall are treated with a translucent film to reduce glare along the reception area while veiling the view from the street. At the onset of darkness, a light show accompanied by music begins at the entrance and proceeds for several minutes. Theatrical fixtures fitted with color washes graze the front doors and glass wall of the facade. The light effects continue to change slowly over one hour, then the cycle repeats. "The key is in the gradual change of color and intensity," Piippo says. "We didn't want to blast patrons directly with light, but we wanted them to slowly become aware that the room is always taking on a new mood."

Project: *Nordic Light Hotel, Stockholm*
Owners: *JM; Ejnar Söder; Hans Mellström*
Architect: *FFNS Arkitekter—Per Wigow, principal architect*
Interior architect: *Hotell och Restaurangprojekturing*
Interior designer: *soder.phil—Lars Phil, Jan Söder, principals*
Lighting designer: *Ljusarkitektur P&Ö—Kai Piippo, principal lighting designer*
Signage designer: *Christin Browall*





"With white walls and a white marble floor, the lobby is like a light box of effects," says Kai Piippo. Sun and starburst patterns in the reception area and dining room (above and left) are projected with architectural fixtures that adapt theatrical techniques.

The hotel staff members behind the reception desk are backlit with ceiling-mounted, low-voltage incandescents that give off a color temperature approximating sunlight. The registration console is edged with fluorescents at its base to subtly uplight patrons.

A sculptural chandelier in the center of the lobby showcases the classic craftsmanship of Swedish art glass. Piippo worked with artist Anna Ehrner to design a formation of stalactitelike spikes enlivening a recessed dome. Each rod encases a fiber-optic element that changes color as part of a choreographed light program. Each season, Piippo reprograms the effect to alter the mix of colors. "The glass rods have been fired with a component of alabaster to vary the quality of translucency," Piippo says. Though not meant to literally evoke ice formations, he notes, they add a poetic punctuation of Nordic culture to the room. (Piippo indeed knows how to illuminate actual ice, as the longtime lighting designer of the annual Ice Hotel in Sweden's Arctic Circle).

The lobby's white walls and curtains function as surfaces upon which to project light. Piippo says he likes to think of them as "movie screens that capture archetypal images composed of light." Rather than theatrical fixtures, he specified architectural luminaires that house 50-watt, low-voltage halogen lamps fitted with pattern projectors. Eight ceiling-mounted luminaires focus narrow beams of light upon the walls and can be synchronized to pulse or slowly fade. The lighting design of the hotel lobby is changed once a month, with custom lighting projections arranged for special events.

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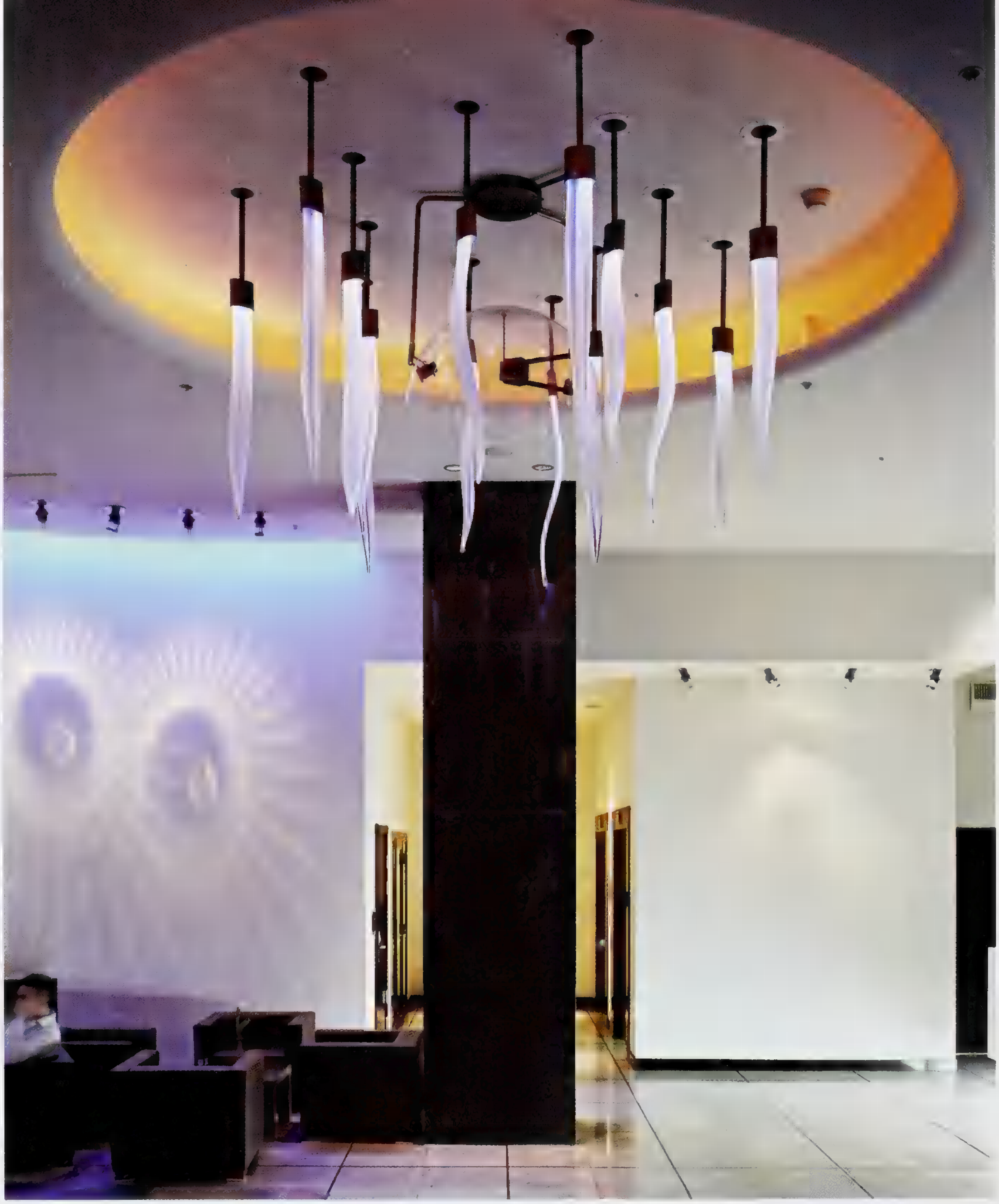
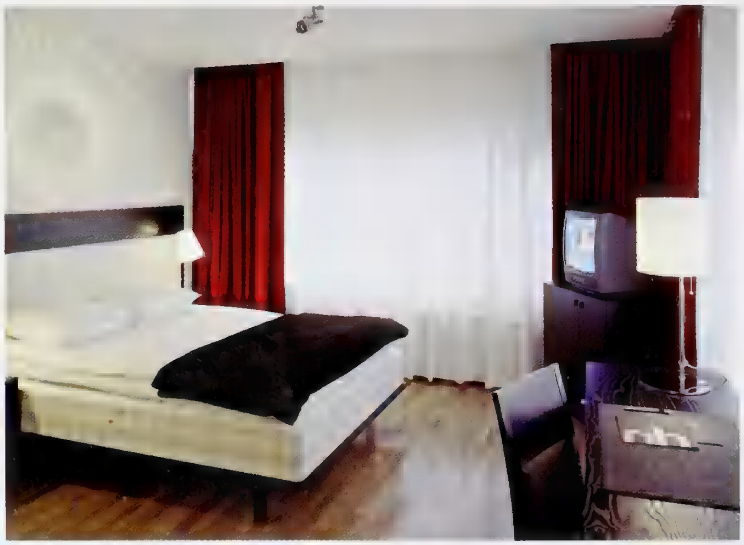


A chandelier composed of blown-glass spikes is internally illuminated by fiber-optic elements that change color (left). The ceiling cove is lit by additional low-voltage strip lights. Guest rooms feature lighting projections above each bed (below). The effect is wired on its own circuit and may be turned off separately by guests. Bedside and desk lamps designed by Piippo employ 60-watt incandescent lamps.



Adjacent to the lobby lounge, the dining room features more than 150 light sources that can mimic natural lighting scenes from sunrise to full daylight. As focal points, six art-glass chandeliers are each illuminated with 15-watt, low-voltage halogens.

Instead of framed artwork in guest rooms, a lighting projection washes the wall above each bed. Larger suites feature as many as three light projections. The ambient lighting effects can be controlled by guests via a standard switch. Task fixtures beside the bed and atop the desk, which house incandescent lamps, were custom-designed by Piippo. ■

Sources

Theatrical projectors, fiber optics: *Martin Professional*

Architectural projectors: *Erco*

Compact fluorescents: *Phillips*

AR111 fixtures: *Modular*

Glass chandeliers: *Kosta Boda*

Exterior signage: *Focus Neon*

Lighting controls: *Tidsrum*

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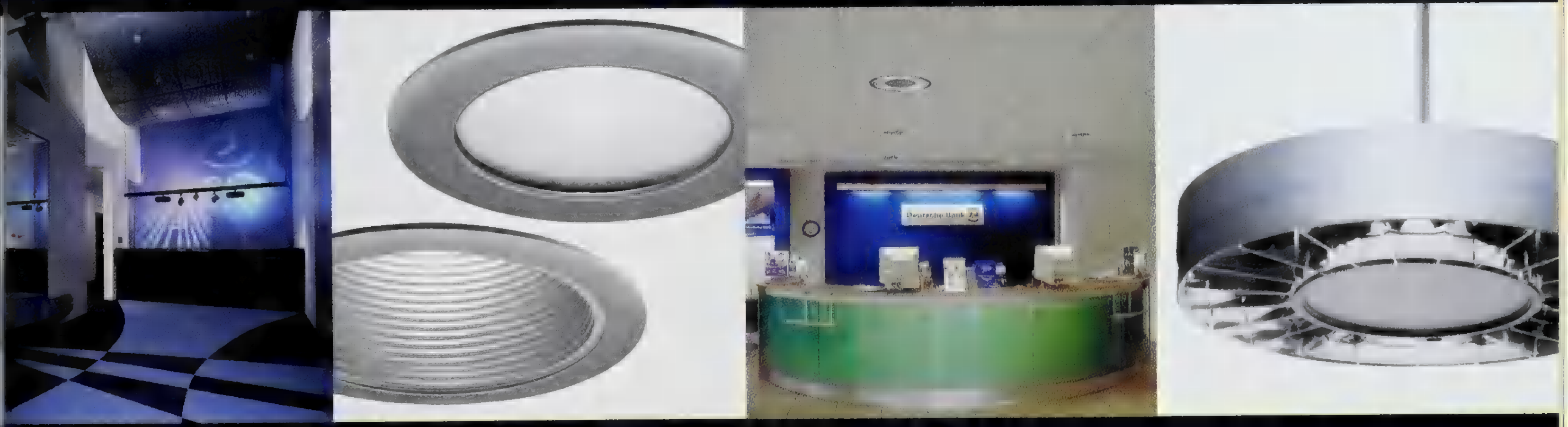

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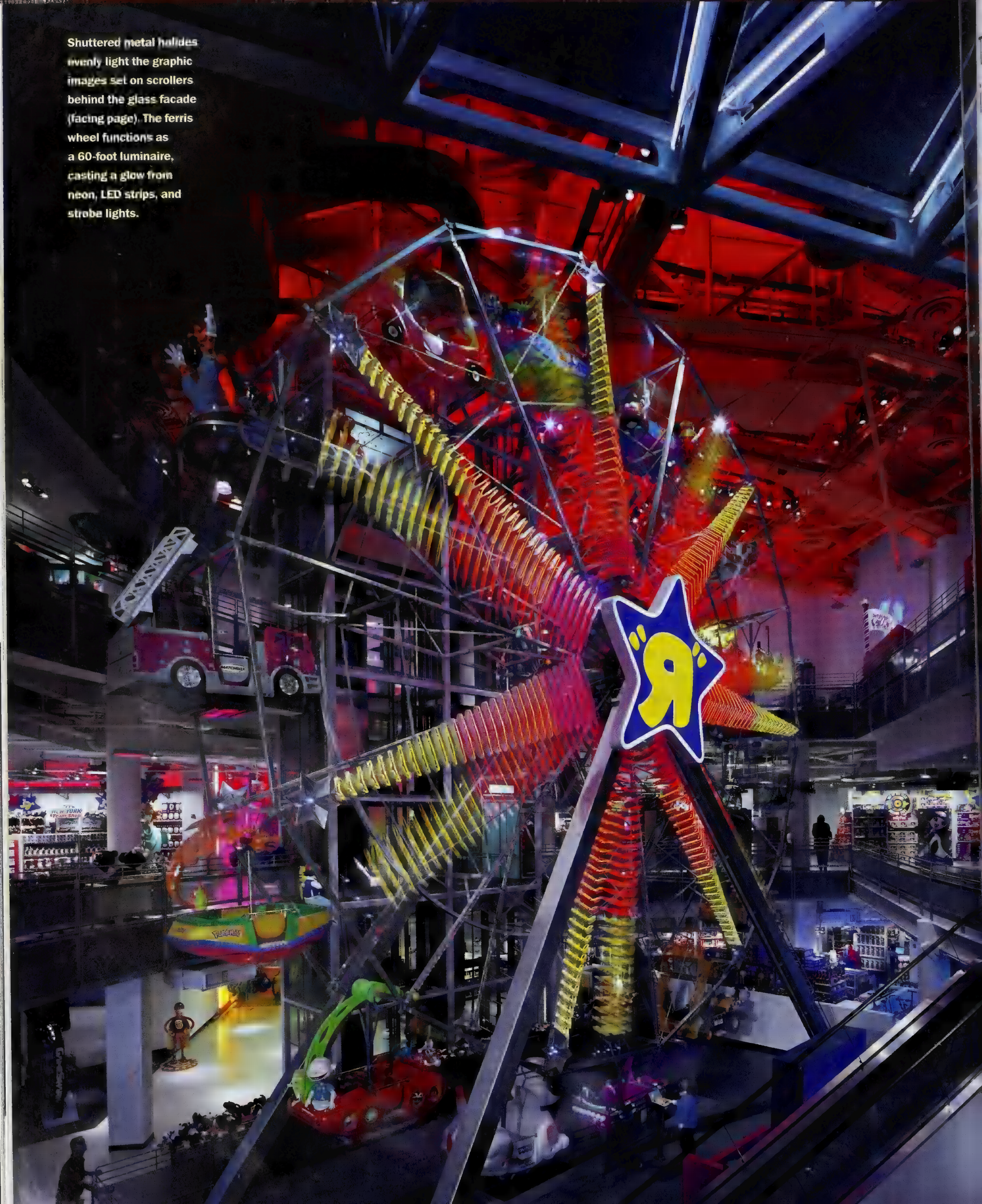
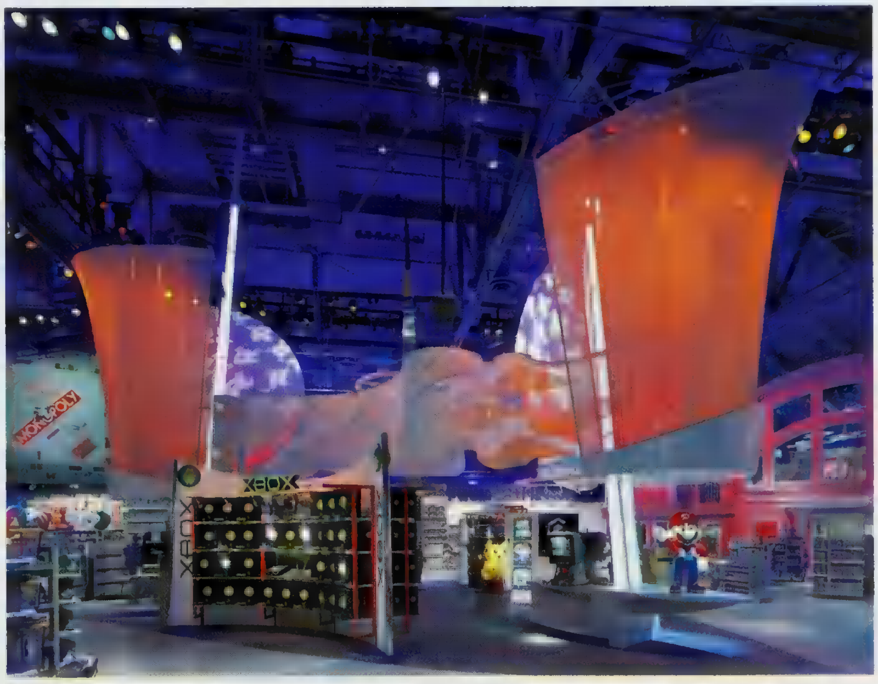
CIRCLE 55 ON INQUIRY CARD

Shuttered metal halides evenly light the graphic images set on scrollers behind the glass facade (facing page). The ferris wheel functions as a 60-foot luminaire, casting a glow from neon, LED strips, and strobe lights.



The veiled theatrical landscape of a flagship toy store in Times Square beckons with a sense of anticipation

By Nayana Currimbhoy



Like an intriguingly wrapped package, the new Toys "R" Us flagship store in New York City reveals itself slowly, creating a sense of anticipation for the surprises contained within. Designed by Gensler with illumination by Focus Lighting, the Times Square store features a glass facade cloaked with supergraphics that periodically change pattern and degrees of transparency, framing fleeting glimpses of the theme-parklike space within for passersby. Theatrical lighting firepower is reserved for the interior landscape, where a riot of flamboyant displays is enveloped with colorful, multimedia effects. J. Newbold Associates and Show & Tell Productions were principal players on the interiors team.

Targeting the estimated 20 million visitors who annually pass through the "Crossroads of the World," Toys "R" Us upgraded its signature toy-warehouse style to create a destination with enhanced tourist appeal. Carved from the footprint of two former Broadway theaters, the four-story store encompasses 110,000 square feet of largely column-free display space that surrounds an atrium.

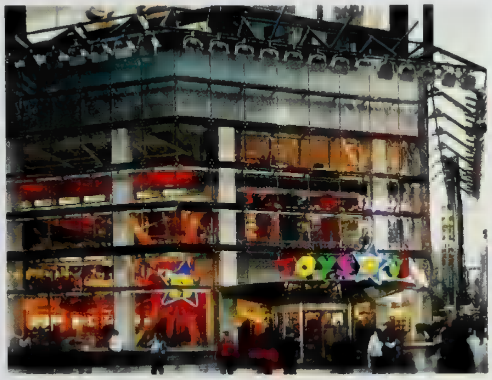
"Along the street, we decided not to compete directly with the flash and glitter of the signs fighting for attention on Broadway," says principal lighting designer Paul Gregory. "Brightness was also a concern, since we wanted the facade to be equally effective during daytime hours."

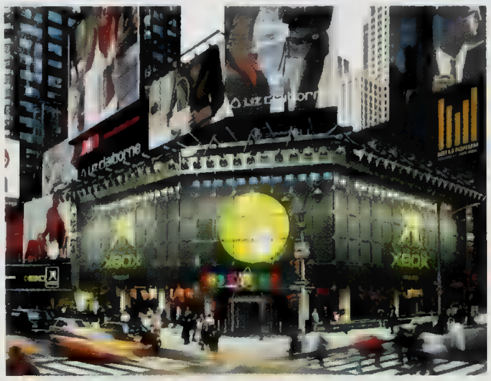
To enhance the facade, the design team adapted a standard theatrical technique to a larger scale. The nonreflective glass windows are lined with theatrical scrollers, automated units that vertically unfurl graphic banners. Each of the 165 scrollers contains seven graphic images printed on polyester fabric, with a 6-foot-high-by-5-foot-wide area displayed at one time. Like backdrops in a Broadway show, the scrollers change position to form varied graphic patterns. Every seventh panel is clear, to reveal interior views. Bracketed from the top of the facade, 1000-watt metal halide fixtures evenly illuminate the graphics without glare. The halide fixtures are fitted with shutters that automatically douse the lights when the graphic scrollers shift to their clear mode. Viewed from inside, the facade wall serves as a backlit perimeter.

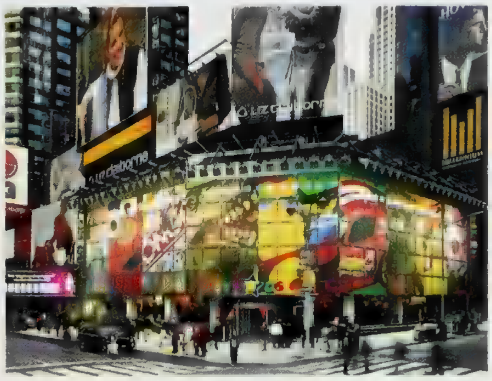
The centerpiece of the store is a 60-foot ferris wheel rising from the ground floor of the atrium. Besides its popularity with kids, the wheel

Nayana Currimbhoy is a New York–based writer and editor who specializes in architecture and lighting. She is a regular contributor to RECORD *Lighting.*

Project: *Toys "R" Us, New York City*
Architect: *Gensler Architecture, Design & Planning Worldwide*
Concept, theming, retail design: *J. Newbold Associates—Joanne Newbold, principal designer*
Lighting designer: *Focus Lighting—Paul Gregory, principal lighting designer; Diana Ades, senior designer; Sepp Spenlinhauer, Michael Steinberg, Jay Woods, Troy Siebels, Bill Plachy, Mark Miller, Gwen Grossman, project team*
Audiovisual, technology designer: *Show & Tell Productions*







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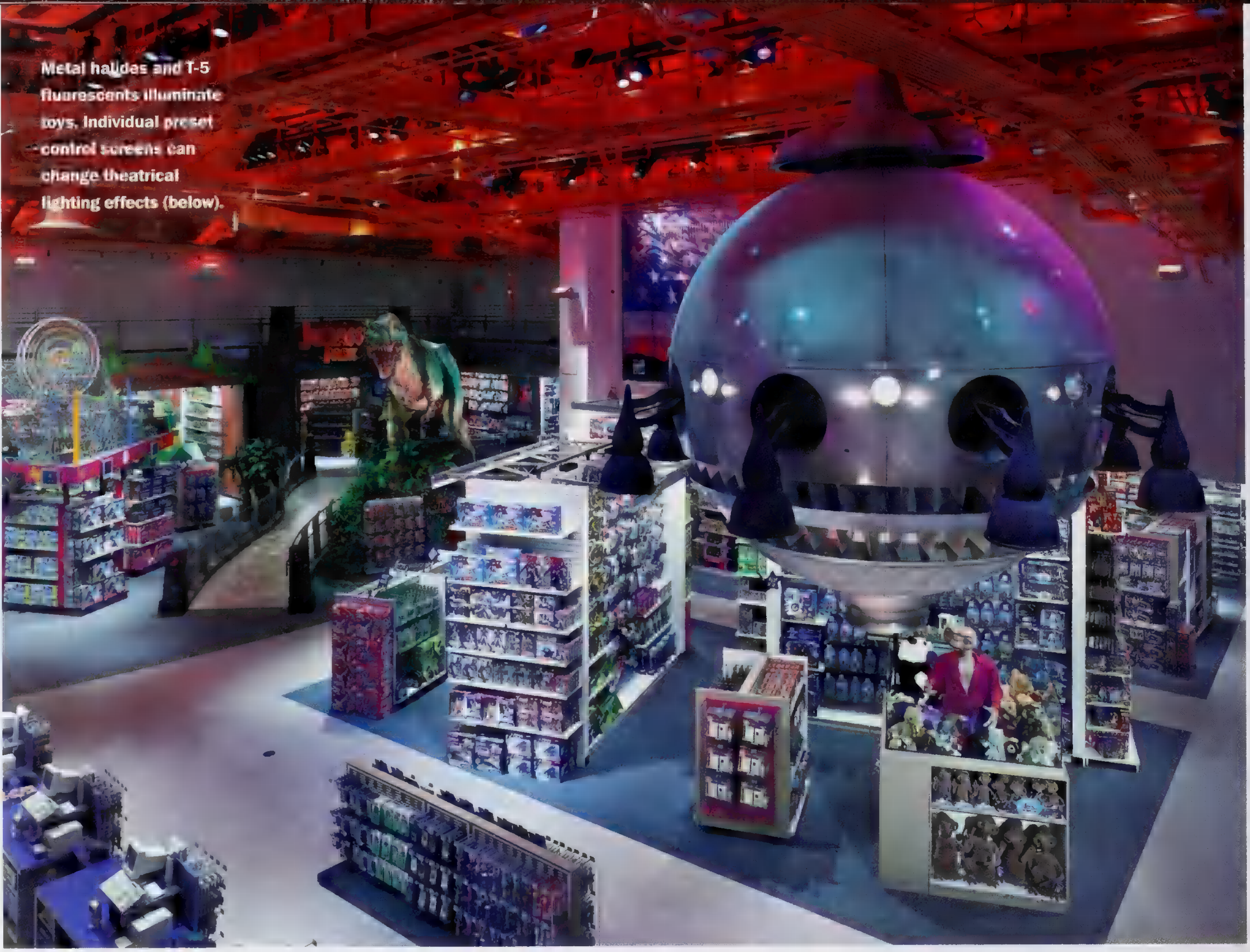

Metal halides and T-5 fluorescents illuminate toys. Individual preset control screens can change theatrical lighting effects (below).

bathes the space in light. Illuminated by neon chevrons, LED bands, and strobe lights, the wheel changes color from red to orange to yellow. Framing the wheel, two neon-edged, glass-and-steel bridges complete the store's circulation loop.

Throughout, ceilings painted blue and amber—enhanced by 400-watt metal halide fixtures fitted with glass color filters in the same hues—are bright canopies. Themed areas function as stores-within-a-store to showcase individual vendor brands. Iconic set props, such as a 20-foot-high animatronic dinosaur, anchor corners of the store and cue circulation. The wall behind the escalator is a quilt of colored light.

To unify the look of display areas, spot and accent lighting is mounted on catwalks traversing the ceilings. Fluorescent fixtures provide the base layer of ambient illumination and define perimeters. Theatrical-style fixtures with 100-watt ceramic metal halide lamps provide even illumination measuring 80 to 100 foot-candles. ■

Sources

Exterior metal halides: *Widelite*

Theme lighting: *Altman; Martin Professional; Insite; Lumiere*

Ferris wheel lighting: *Diversitronics; Tokistar*

Merchandise lighting: *Amerlux; Lightolier; Mark Lighting; RSA Lighting; Tech Lighting*

Controls: *Entertainment Technology (Horizon)*

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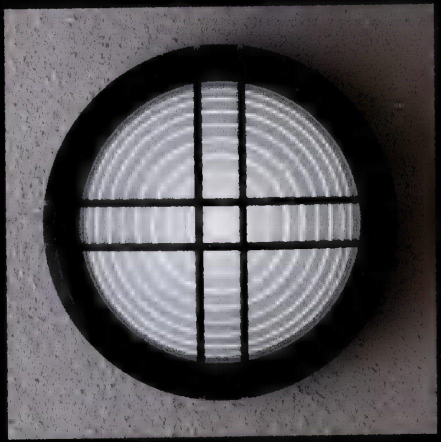
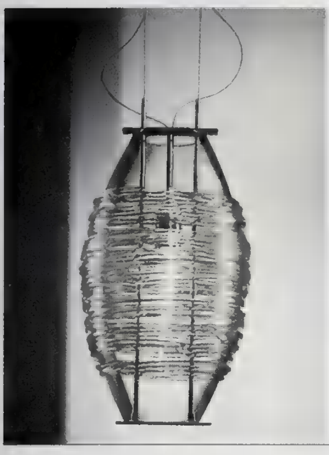


Wall Form

CIRCLE 57 ON INQUIRY CARD

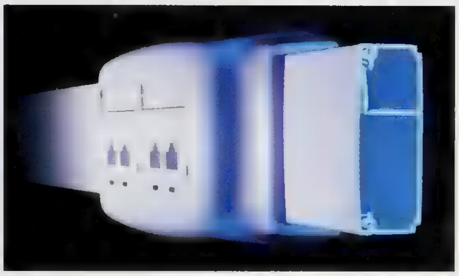
Lighting Briefs



◄ Glassblowing techniques

Oty Light is a new collection of glass lighting fixtures with roots in Venice, Italy. The new introductions include the UL-approved Kioto series (pendant shown). With Kioto, master Murano glassblowing techniques were used to fashion a tapering tower of clear crystal wrapped with strands of molten glass that recall bamboo or cane. Pendant, table, and floor lamps are available with spare chrome-plated metal details. 800/734-5858. Illuminating Experiences, Highland Park, N.J. **CIRCLE 200**

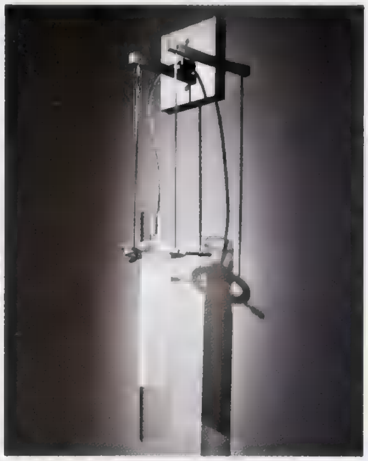
► Intermediate size raceway



New Eclipse 2 raceway from The Wiremold Company combines a low profile with the capacity needed for typical workstation applications. It is designed to support front-loading Ortronics TracTack and Series II modules. Eclipse 2 raceway has full-capacity, two-inch bend radius fittings to protect fiber-optic and UTP cable. The preassembled base, divider, and cover eliminate the need to cut three separate components. 800/621-0049. The Wiremold Company, West Hartford, Conn. **CIRCLE 201**

▲ Tihanyan lighting

Adam D. Tihany has designed the Lufo collection of table and floor lamps, pendants, and wall sconces for the residential market. Inspired by the glass forms of Carlo Scarpa, Tihany used Sirmos CyTron Translucent resin to create a collection characterized by unusual shapes and silhouettes. 212/371-0910. Sirmos Lighting, A Division of Bromante Corporation, New York City. **CIRCLE 203**



► South Park stars

Part of a family of lights designed by San Francisco–based South Park Fabricators, Swing Wall (above) features a satin aluminum finish, frosted Pyrex diffuser, and a 35-watt Bi-Pin 12-volt halogen lamp. The B44 pendant (right) features an incandescent 60-watt T10 lamp, either a light or dark patina steel finish, and a Pyrex glass diffuser filled with a custom liquid color. 888/477-9288. 100watt Network, New York City. **CIRCLE 202**

▲ Pedestrian-friendly

TEKA Illumination's large classic Saturn pole mount series won the Lightfair 2001 "Best of Category" award for site and roadway lighting. Constructed of bronze, copper, brass, and stainless steel, the fixture is UL-listed suitable for wet locations. The luminaire utilizes a high-efficiency reflective optics system with a metal halide lamp that spreads light consistently without glare. 805/434-3511. TEKA Illumination, Templeton, Calif. **CIRCLE 204**

▼ Boxy bollards

Bega offers bollards for illuminating pathways and vertical surfaces. The 8535 series features optical systems with concealed light sources for downlighting without glare or efficient asymmetrical floodlighting of walls, both contained in matching trapezoidal bollard housings. The bollards feature ceramic metal halide G12 T6 lamps, rugged construction, and are suitable for wet locations. 805/684-0533. Bega/US, Carpinteria, Calif. **CIRCLE 205**

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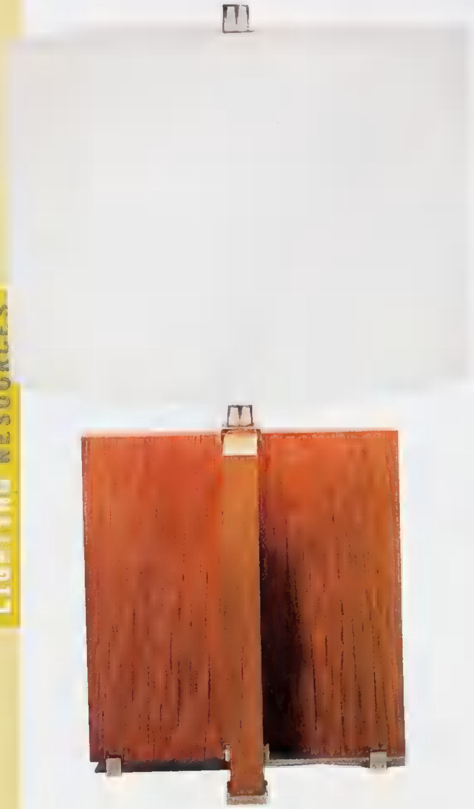

◂ Covering all the bases

Luke and Lucy are companion glass-base and wood-base decorative table lamps. The lamps provide softly diffused ambient area lighting for executive suites, hospitality and reception areas, and residential applications. Lucy (shown) features a broad oval shade, which sits atop two intersecting solid maple wood blocks. Solid brass accents include small brass feet at the base of each wood block, support brackets at either end of the fixtures, and an understated oval finial in a shade that matches the solid brass lamp arm. 914/698-7799. Nessen Lighting, Mamaroneck, N.Y.

CIRCLE 206

▴ Higher output, color matching

Ushio's new Ultra 5000 T10 fluorescent lamps can produce 15 percent higher lumen output of natural daylight color in comparison to standard T12 fluorescent lamps. The lamps can be used as a direct replacement for standard T12 fluorescent tubes without changing the ballast. If used with electronic ballasts, an additional 15 percent energy savings can result. Ultra8 U-bend T8 fluorescent lamps with six-inch leg spacing can match the color of linear T8 lamps being used in the balance of an installation. The tubes are available in 32 watts with an average life of 24,000 hours. 800/838-7446. Ushio America, Cypress, Calif. **CIRCLE 207**

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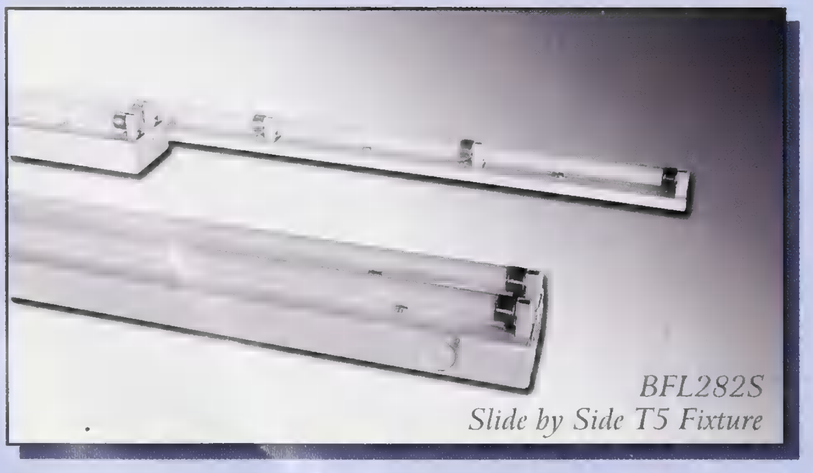

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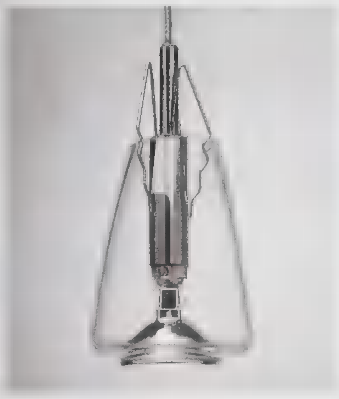

▲ City lights
The Osaka pendant light fixture provides crisp, white, focused accent downlighting for upscale retail stores, hospitality venues, conference rooms, or reception areas. The pendant features a cylindrical, tapered, clear glass shade, a tubular chromed lamp body, and a MR16 lamp. 914/698-5959. d'ac Lighting, Mamaroneck, N.Y. **CIRCLE 208**

▼ Mach speed
Mach 1, 2, and 3 low-voltage adjustable lamp holders rotate, tilt, and orient in three axes. The components of these modular fixtures are machined of aluminum and accommodate any of three special-effects lenses, filters, and louvers for optimum control of beam spread, color, and intensity. All fixture models are for use with MR16 halogen Bi-Pin lamps, 50-watt maximum. 800/879-9797. Lucifer Lighting Company, San Antonio. **CIRCLE 209**

◄ Light bright
NiteBrites Outdoor HID lighting from Day-Brite Lighting introduces the Economic Outdoor Series of low-wattage, outdoor luminaires that consist of metal halide and HPS floodlights, HPS wall packs and canopies, quartz floodlights, and PAR lamp holders. The luminaires are UL-approved for wet locations and feature die-cast aluminum housings, tempered glass or polycarbonate lenses, and durable paint finishes. 800/234-1890, ext. 6688. Day-Brite Lighting, Tupelo, Miss. **CIRCLE 211**

► Be indirect
The Indirect series from Architectural Area Lighting combines soft, low brightness illumination with high color rendering using ceramic metal halide lamps. The Indirect is available with a round or square reflector that can pivot 15 or 30 degrees. Post-top and wall-mount models are available. 714/994-2700. Architectural Area Lighting, La Mirada, Calif. **CIRCLE 210**

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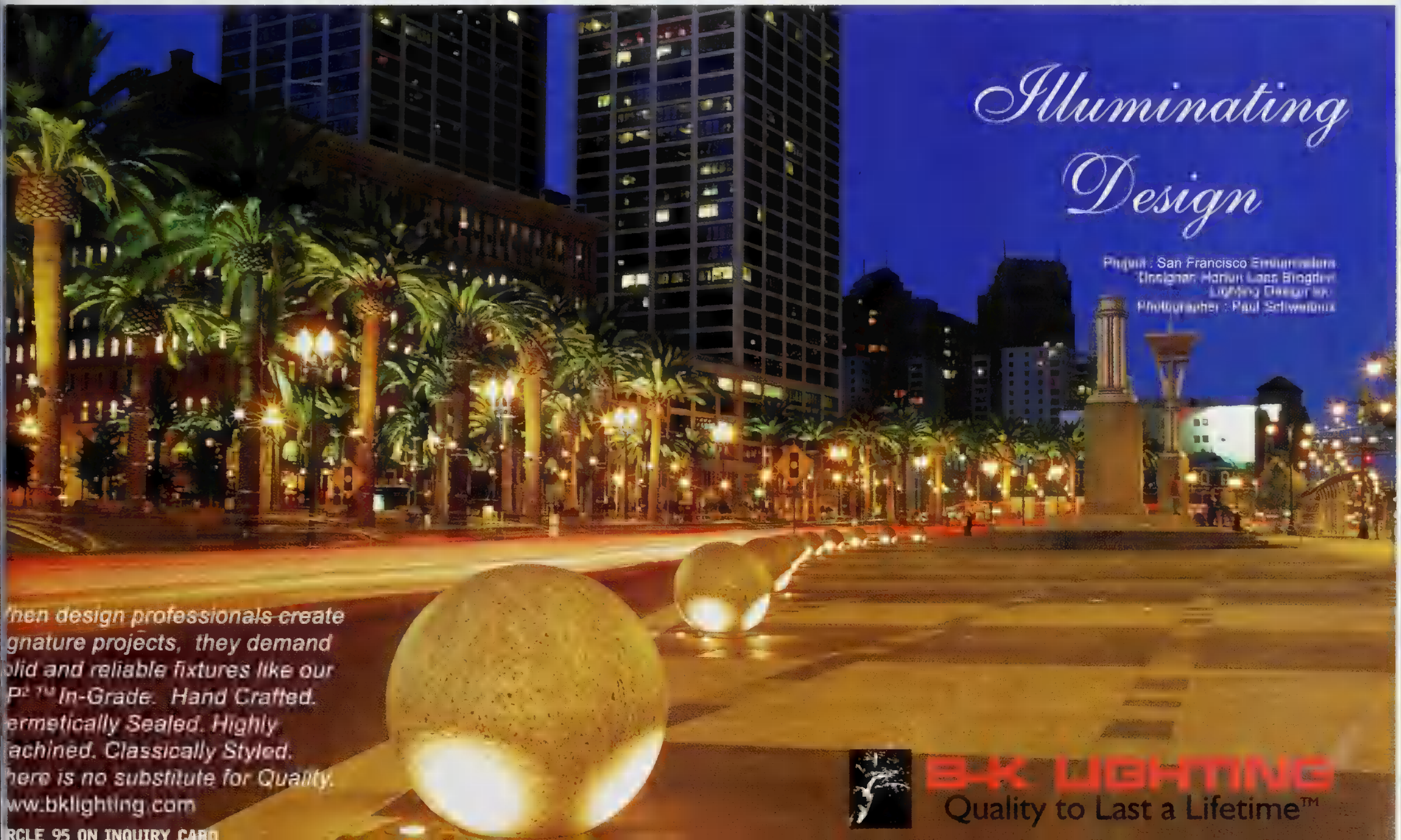
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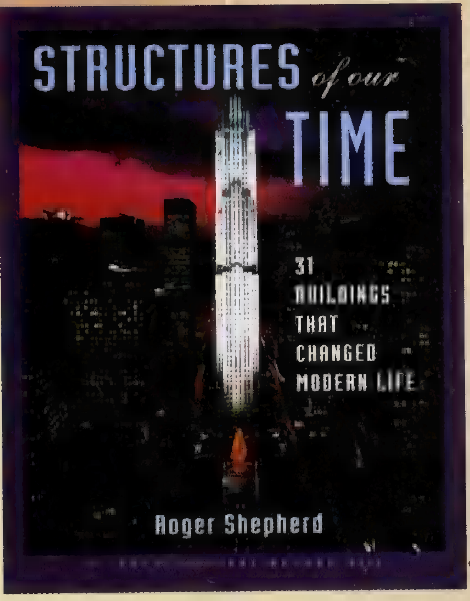

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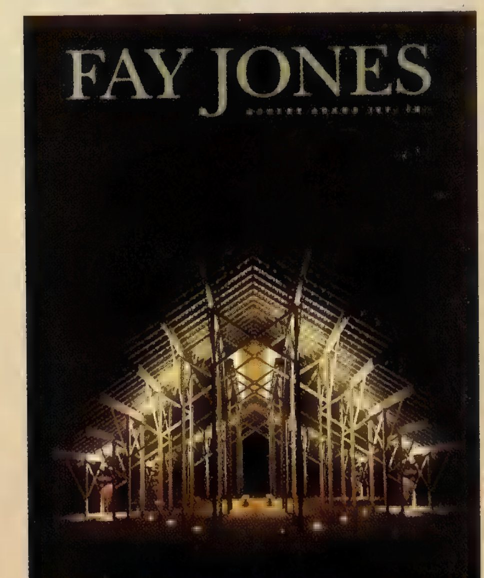

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New Products

According to the National Wood Flooring Association, more than 80 percent of commercial architects "recommend wood flooring for its beauty and durability." In addition, architects prefer wood floors for residential settings because they "add value to the home" (89 percent) and have "environmental/health benefits" (68 percent). *Rita F. Catinella*

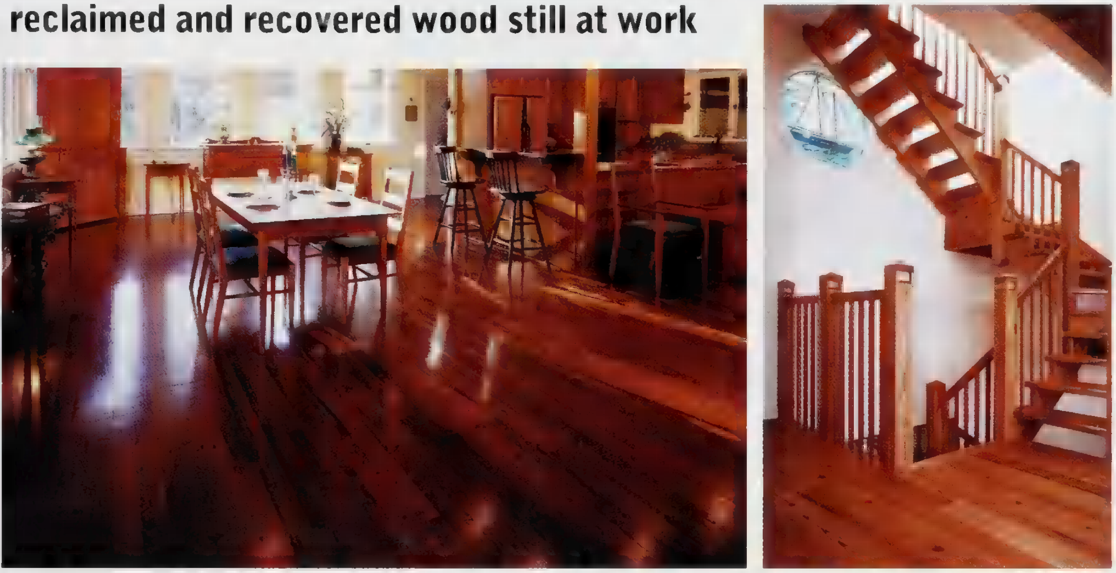
Hundreds of years later, reclaimed and recovered wood still at work

According to the National Wood Flooring Association, using salvaged wood to produce flooring is a major trend in the industry—the rustic look is not only popular with clients but extends the life of the wood.

Reclaimed wood floors come from a variety of sources, including lumber used in old barns, mills, and factories. The buildings are dismantled one piece at a time and metal detectors find hidden nails. The most common types of wood found are the long-leaf heart pine, American chestnut, and red/white oak that were popular in buildings from the 1800s through the early 1900s. Asia Rain Jungle hardwood comes from reclaimed railroad ties of exotic species salvaged in Southeast Asia.

Recovered wood floors are made from logs dredged from lakes or rivers by divers. Heart pine and heart cypress are two of the most well known recovered woods. "Sinkers" are timber logged 70 to 200 years ago that was cut down and built into crude rafts to float to saw mills. The rafts would break apart and sink to the bottom of the river. The water preserves the recovered logs from light and oxygen, so they may look new but have a different coloration.

Reclaimed floors come at a higher price: Prime cuts are as much as three times more than new wood, while river-salvaged wood averages 15 percent more than reclaimed. 800/336-3118. Goodwin Heart Pine Company, Micanopy, Fla. CIRCLE 212



Goodwin Heart Pine Company in Micanopy, Fla., manufactured these river-recovered heart pine floors.

Ten Aussie wood species now available in U.S.

Boral Timber, with more than 100 years of experience producing wood-flooring products in Australia, introduces 10 species of Australian hardwood flooring to the U.S. market. The 10 species, with colors ranging from deep red to pale pink to yellow, include: Alpine ash, Australian beech, Australian cypress, Heritage oak, jarrah, karri, Rose River gum, Spotted gum, Sydney blue oak, and Tasmanian oak.

Australian hardwood, made from rare eucalyptus or cypress trees, is almost twice as hard as American oak. Wood flooring from Boral Timber is available in two grades: Classic and Australiana. Classic is equivalent to the select grade used in American oak, which is almost clear of any knots or color variations. Australiana shows more natural features and characteristics of the wood like gum veins, spirals, shakes, burls, and insect marks. An extremely durable type of lumber species, Australiana is offered at a lower cost than Classic grade.

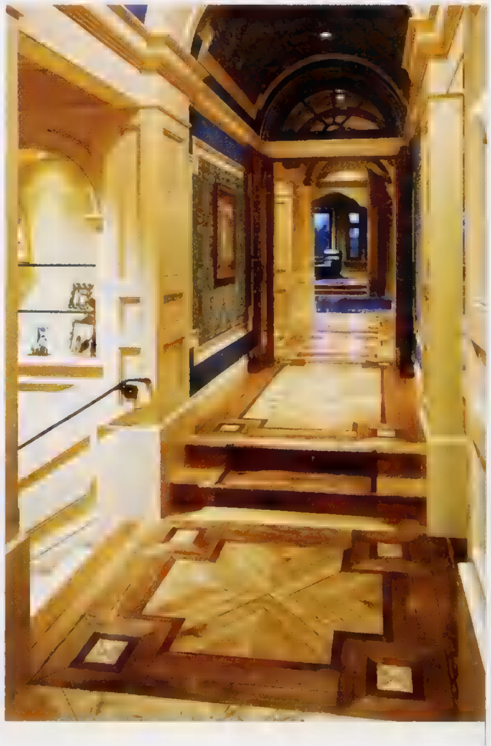
Boral Timber also produces longer boards, which give a more continuous feel. The average length of Australian wood flooring exceeds 4 feet, compared to 3 feet in the select grade of American oak in the U.S. In addition, Australian wood flooring has an average width of 3¼ inches, compared to 2¼ inches in the U.S.

The cost for Boral Timber wood is comparable to that of American cherry, pecan, walnut, and ash. Boral adheres to proper forest management practices and only harvests trees where regeneration is assured. 800/BORAL-60. Boral Timber, Novato, Calif. CIRCLE 213

Australian cypress offers a golden brown color and tight knots (left). Rose River gum is prized for its rose coloring (above).

New Products

► Honoring wood flooring design



Last June, the National Wood Flooring Association honored several hardwood floor designs for their compatibility with other room components. Two winners that dominated the 2001 Floor of the Year Awards were Birger Juell Ltd., of Chicago (project shown, right) and Renaissance Floor In-Lays, of San Francisco, who took two top categories. Birger Juell was awarded the 2001 Floor of Year, Master Division, and Renaissance Floors captured the Members Choice, Master Division, and the Best Use of Wood Technology. The National Wood Flooring Association is a nonprofit trade organization of nearly 2,200 wood-flooring professionals working to educate consumers, architects, designers, and builders in the uses and benefits of wood flooring. 800/422-4556. National Wood Flooring Association, Ellisville, Mo. **CIRCLE 214**

RECOVERED WOOD TERMS:

Heartwood

Develops slowly in the center of the tree as it matures. Turns a rich red color and produces a durable wood.

Sapwood

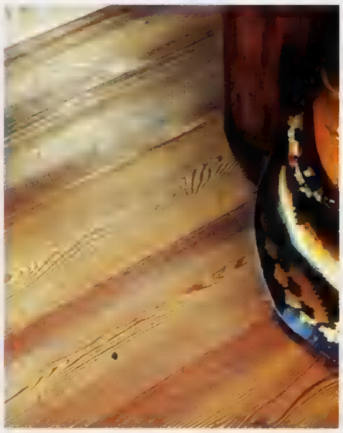
Lighter color wood on perimeter of log; does not deepen in color and isn't as hard as heartwood.

Nail staining

Caused when the metal "bleeds" around the nail hole. Can be filled on-site.

Natural color

In recovered wood, heart pine is shades of pink or yellow, but it will turn a consistent, rich red color after exposure to UV light. To retain original light color, use a UV inhibitor in the finish.



▲ Moonstruck

Mafi wide-plank floors are available in custom lengths up to 16 feet and widths up to 12 inches. The Lunarwood Collection is a species of larch that is harvested only in the winter months in accordance with the moon's waning lunar phase, when moisture content is at its lowest. Volcano larch (above) is wire brushed and natural-oil finished. 800/222-1068. Hoboken Floors, Wayne, N.J. **CIRCLE 218**

► Bottoms up

Mountain Lumber craftsmen reclaimed and milled antique English cider oak planks from the 60,000 gallon vats of an English cider mill. Steeped for a century in strong British-style cider, the two grades of wood flooring are named after the mill's most popular ciders: "Strongbow" and "Scrumpy Jack" (shown, right). 800/445-2671. Mountain Lumber, Ruckerville, Va. **CIRCLE 215**

◄ Bark up the right tree

Named for the Roman goddess of the harvest, Ceres cork flooring comes in three different configurations: natural cork tile; engineered cork tile, which features veneer-patterned surfaces over solid cork; and cork floating floor. Natural cork tiles are available in a variety of finishes—sanded, waxed, urethaned, and prestained colors—as well as chip patterns. Ceres is available this month. 631/864-9700. CBC (America), Commack, N.Y. **CIRCLE 216**

► New colors and new species

Hartco's signature hardwood flooring product, Pattern Plus 5000, is now offered in 13 additional colors. The Pattern Plus 5000 Maple series features nine of the new colors, while the remaining four are in a new species series, Pattern Plus 5000 Ash. The flooring may be installed at, above, or below ground level in residential or commercial applications. 800/841-4630. Hartco Flooring, from Armstrong, Addison, Texas. **CIRCLE 217**

◄ Wormy wood

American Chestnut disappeared after the introduction of an Asian blight around the turn of the twentieth century. Vintage chestnut is milled from old boards and beams of farm buildings and log homes up to 200 years old. It contains knots, nail and spike holes, worm holes and tracks, and varying grain patterns. 800/499-7859. Vintage Lumber, Woodsboro, Md. **CIRCLE 219**

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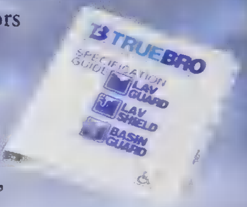

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Product Briefs

▲ Woody vinyl

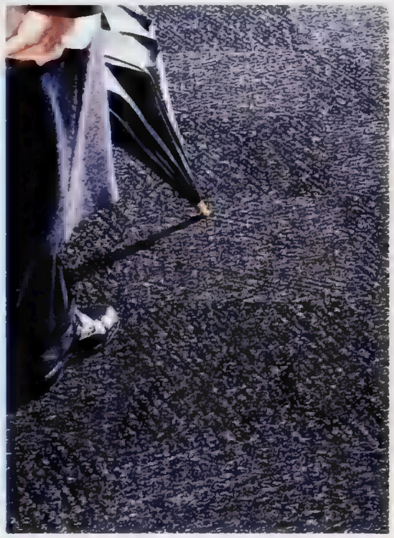
For several years, Lonseal has attempted to formulate an environmentally friendly flooring product that would have the appeal of wood or laminate but the resiliency and maintenance of vinyl. The result is LonEco, a new flooring material composed of up to 35 percent recycled materials—including wood powder and recycled vinyl. LonEco is available in a palette of neutral and bright colors. 800/832-7111. Lonseal, Carson, Calif. **CIRCLE 220**

◄ Ornamental precast

Concrete Designs has specialized in the design and manufacture of architectural ornamentation, site furnishings, and fireplace mantels for more than 40 years. The company offers an antique texture that creates a more natural looking, aged appearance. Through an in-house staff of pattern and mold makers, Concrete Designs has expanded its custom capabilities. 800/279-2278. Concrete Designs, Tucson. **CIRCLE 222**

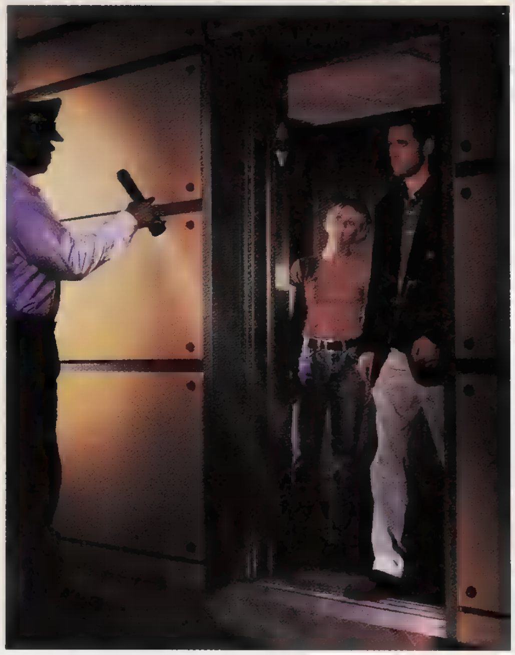
► Please wipe your feet

Lees has developed FirstStep 18" x 18" inch textured-loop pile modular carpet tiles specifically for entryways. FirstStep is engineered with heavy "scraper" yarn that provides ideal soil removal and collection. Each square yard of the product holds up to 5.6 pounds of sand—more than twice its normal weight. Additionally, FirstStep's construction removes and absorbs up to 7.3 pounds of water per square yard, or about three times its normal weight. 336/379-2000. Lees Carpets, Greensboro, N.C. **CIRCLE 223**



Product of the Month
KONE's RSQ-Pak

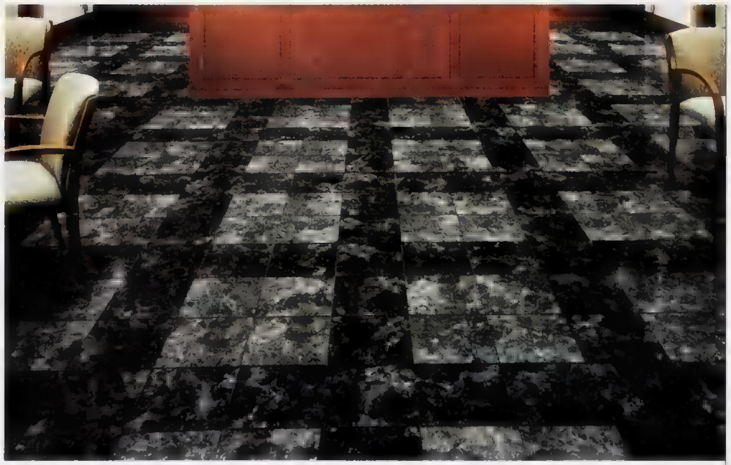
Energy shortages and rolling blackouts can unexpectedly trap passengers in elevators for minutes or hours. KONE's RSQ-Pak can be installed to assist during power outages. When power to a building or an elevator is interrupted, KONE RSQ-Pak is designed to gently lower the elevator to the lowest level and open the doors automatically so passengers can exit without assistance. RSQ-Pak can be installed in new or existing hydraulic elevators. The system consists of hardware, special wiring, integral emergency power source, and automatic control mechanisms. All system components are installed in the elevator machine room, and installation can typically be completed in less than a day. 800/956-5663. KONE, Moline, Ill. **CIRCLE 221**



► Breaking new ground

KI's Genius full-height movable wall features anodized or painted aluminum frames and glass-butted corners. Glass panels come in a choice of single glazed, double glazed, or double glazed with blinds. Panels can be specified in fabrics, vinyl, and powder coat paint. Genius has the highest sound transmission coefficient in the wall industry at STC-44. KI's All Terrain Mobile furniture system includes tables with multifunctional base options that allow for height changes within a seven-inch range. 800/424-2432. KI, Green Bay, Wis. **CIRCLE 224**

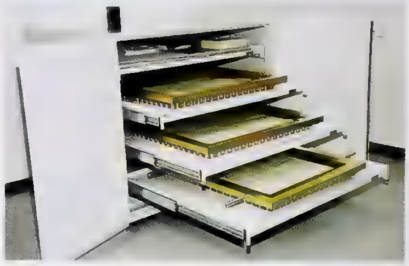
Product Briefs



▲ Tempered-glass floor tile

Obsidian is a patent-pending tempered-glass tile product that creates a new category in contract and residential flooring. To produce Obsidian, a 12" x 12" tile, Congoleum uses a process that marries tempered glass with a polymer composite backing. The floor is designed for residential use as well as an array of light commercial applications, including hospitality and retail environments. The product has the same slip resistance as a standard granite floor, and its installation is similar to marble flooring using mortar and grout. A foam underlayment provides flexibility and impact resistance. 609/584-3000. Congoleum, Mercerville, N.J. **CIRCLE 225**

► Protecting our rights



When the National Archives and Records Administration in Washington, D.C., embarked on its first major renovation since it opened in the 1930s, archivists recruited the storage experts at Spacesaver to help protect and preserve the U.S.'s founding documents: The Declaration of Independence, Constitution of the United States, and Bill of Rights. Spacesaver was asked to design special cabinets to safely store these documents during the renovation. 800/492-3434. Spacesaver, Fork Atkinson, Wis. **CIRCLE 226**

◄ Off the chart green

HBF now offers the EcoStone material as a top option for the Chart Table. Made of recycled newsprint and soybean flour in a water-free process, EcoStone is a renewable agricultural resource that looks like stone but fabricates like wood. A urethane-based resin fuses EcoStone's components, leaving the material free of formaldehyde and all VOCs. When the boards are trimmed, scraps are reground and used in future production. 828/328-2064. HBF, Hickory, N.C. **CIRCLE 227**

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HP Basic Coated Paper
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Product Briefs

► Smarter sink bubbler

The heavy, type 304 cast-stainless-steel body and cartridge of the Classroom Sink Bubbler are 100 percent lead free. The stainless-steel unit is also harder and more durable than brass, and its finish will not peel and pit over time, as chrome-plated brass can. A vandal-resistant version prevents vandals from turning the unit or removing the push button. 847/678-5150. Just Manufacturing Company, Franklin Park, Ill. **CIRCLE 228**

► Solid modeling process

A majority of stone-cutting projects consisting of complex designs are manufactured using one of Cold Spring Granite's 12 CNC Diamond Wire Saws. This solid granite American flag is an example of one of the projects that employed Solid Modeling and was crafted by a CNC Diamond Wire Saw. The base is made of Academy Black granite, and the flag is made of Sierra White granite. 800/551-7502. Cold Spring Granite, Cold Spring, Minn. **CIRCLE 229**

◄ Get a grip on safety

Grit-strip safety flooring from Musson Rubber is a tough, mineral-coated, waterproof, nonslip surface with a pressure-sensitive adhesive back. Grit-strips will tolerate steam or detergent cleaning and are essentially unaffected by climate. Colors include gray, brown, beige, or safety yellow or red. 800/321-2381. Musson Rubber, Akron. **CIRCLE 230**

◄ Operable bonding

The YOW 225 TU line of operable windows, with a 2¼" frame depth, are available in fixed, project out/in vents and swing out/in casement configurations. The new window line features YKK Ap's ThermoBond Plus poured and debridged technology that promotes adhesion of the polyurethane material to the walls of the thermal break cavity. 404/629-3800. YKK AP America, Atlanta. **CIRCLE 231**

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Product Briefs

▲ Improve your communication skills

Jeron's Spectrum Digital Duplex Intercom System has the flexibility for hands-free or private two-way communication throughout an entire facility. Spectrum can offer solutions for security applications including secured entryways, parking structures, elevators, stairwells, dock areas, and storage rooms. The digital signal process instantly adjusts loud speaking volume levels to compensate for acoustically difficult locations. With built-in diagnostics, available redundant power sources, and battery backup, Spectrum will provide reliable operation even if power is lost. 800/621-1903. Jeron Electronic Systems, Chicago. **CIRCLE 232**

▼ Table for ten

Round, folding cafeteria tables from BioFit feature tough, one-piece ABS plastic seats for 10 people, compared with seating for eight with round cafeteria tables from other manufacturers. The round configuration eliminates the institutional appearance of rectangular tables and helps give a plant or office cafeteria the inviting atmosphere of a food court. People are closer to each other for improved communication and reduced noise. A single person can easily fold the round tables and move them through a standard 36-inch doorway. Table tops feature the Lotz Armor Edge rim, which leaves no seams or cracks to trap food or bacteria. 800/597-0246. BioFit Engineered Products, Waterville, Ohio. **CIRCLE 233**

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Product Briefs

▼ Tilt-turn architectural windows

Rehau's 4500 series tilt-turn architectural window design offers a multichambered window system engineered to exceed current window test standards. A European-engineered dual sealing system forms a barrier against the elements, with an uninterrupted inner compression seal around the entire window. The design provides for inward or outward opening casement windows, in addition to enabling configuration of awning, hopper, or picture windows. 800/247-9445. Rehau, Leesburg, Va. **CIRCLE 234**

▲ Laser distance-measuring tools

Disto handheld laser meters provide fast measurements of distance, area, and volume, indoors or outdoors, with an accuracy of up to 1.5 mm at range of up to 100 meters. With Disto, one person can capture hundreds of measurements in a matter of minutes, with point-and-click operation, even in locations that are inaccessible or blocked by obstructions. The products are available in four models, ranging from the lower-cost Disto lite with basic features, to the high performance Disto pro^{4}a. 770/447-6361. Leica Geosystems, Norcross, Ga. **CIRCLE 235**

► Air-pressure sensor

The Dietz Model FE190 Forced Entry Sensor will detect the breaking or opening of a window or door without requiring the installation of individual sensors. It will also detect if forced entry is made through a hole in the ceiling, wall, or floor by the resulting drop in air pressure. 888/866-5641. The Henry G. Dietz, Long Island City, N.Y. **CIRCLE 236**

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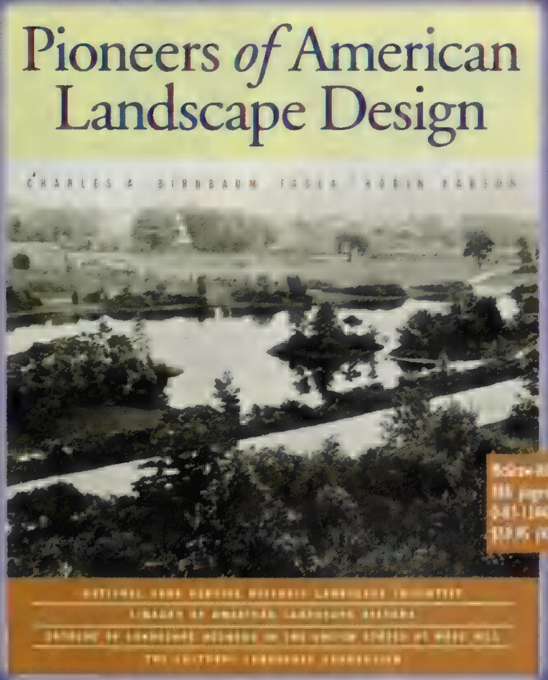
A Landmark Resource



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Product Literature

Let's get this party started

Luraline Products has introduced a new brochure showcasing the Confetti line of its Designer Series of lighting fixtures. The 10-page brochure includes complete specification details as well as an ordering guide for assistance in selecting from Confetti's available configurations, finish options, and enhancements. 800/940-6588. Luraline Products, Opa Locka, Fl. **CIRCLE 237**

Outdoor lighting

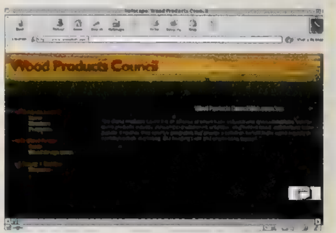
Hallbrook Series outdoor luminaires from Holophane are detailed in new literature from the company. Applications include urban boulevards, town squares, commercial shopping districts, parks, and college campuses. 740/345-9631. Holophane, Newark, Ohio. **CIRCLE 238**

Door offerings

Two brochures from VT Industries' architectural wood door division are now available. The first describes the features and benefits of VT's SolidStyle wood veneer doors and PermaClad decorative laminate wood doors. The second brochure focuses on the PermaGuard factory finish system and VT Color Choices. 800/827-1615, ext. 210 or 304. VT Industries, Holstein, Iowa. **CIRCLE 239**

NEW SITES FOR CYBERSURFING

Wood Products Council site represents manufacturers of lumber, engineered wood, architectural millwork, and wood composite panels. **www.woodinfo.com**

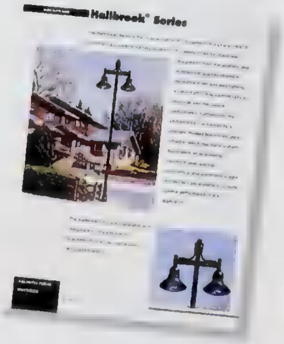


Kohler's renovated site features an interactive bathroom design area and design tips. **www.kohler.com**

Newly redesigned site for Lighting Services' track, accent, display, and fiber-optic lighting systems. **www.lightingservicesinc.com**

Green software

The *EBN Archives* is an archive of all issues of the *Environmental Building News* monthly newsletter from 1992 through the end of 2000 on a single CD-ROM. The *Green Building Advisor* is an interactive software tool that helps users identify strategies for improving the environmental performance of projects. 800/861-0954. BuildingGreen, Brattleboro, Vt. **CIRCLE 240**



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Product Literature

World-famous names

Furniture and accessories by designers such as Philippe Starck, Marcel Breuer, Alberto Meda, and Michael Graves are featured in a new 100-page catalog from Oriac Design. 866/GO-Oriac. Oriac Design Group, Newton, Mass. **CIRCLE 241**

Renewing concrete

The Sealtight Concrete Renewal Systems Brochure provides photography and descriptions for seven typical renewal system application areas for general purpose or structural repairs and restoration. 800/342-5976. W.R. Meadows, Hampshire, Ill. **CIRCLE 242**

Waterjet cutting services

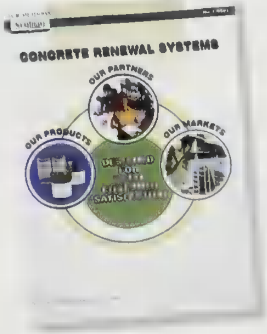
Precision H_20, an ultra-high-pressure waterjet-cutting company, has produced a new brochure showcasing its specialized services. The piece explains the waterjet process and highlights several installations incorporating natural stone, ceramic tile, and resilient materials. 800/425-2098. Precision H_20, Spokane, Wash. **CIRCLE 243**

Southern Pine flooring guide

The newest publication from the Southern Pine Council, *A Guide to Southern Pine Flooring*, contains all the facts pertaining to proper installation, finishing, and maintenance of a high-quality Southern Pine floor. The 20-page brochure explains the intricacies of Southern Pine flooring grade, patterns, and manufacturing. Extensive text and instructive illustrations cover the installation and finishing processes. A special section of the booklet is devoted to pressure-treated Southern Pine porch flooring. 504/443-4464. Southern Pine Council, Kenner, La. **CIRCLE 244**

Roofing guide/safety tips

The National Roofing Contractors Association (NRCA) offers the 2001–02 *Low-slope Roofing Materials Guide*. The guide is a comprehensive report on commercial, industrial, and institutional low-slope roof coverings, rigid insulation board, fasteners, and cements and coating products currently available in the U.S. market. Detailed descriptions of the manufacturer's roofing materials are included. The NRCA also offers *From Shop to Rooftop: Sheet Metal Safety Tips*, a videotape program and workbook that addresses aspects of sheet metal safety. 800/323-9545. NRCA, Rosemont, Ill. **CIRCLE 245**



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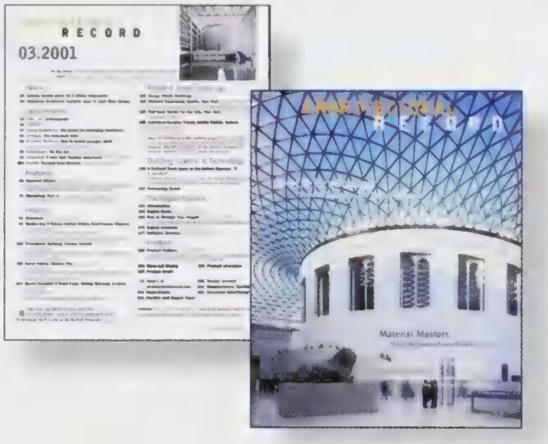
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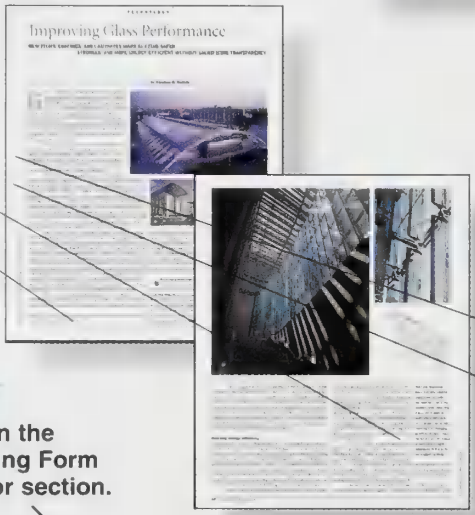
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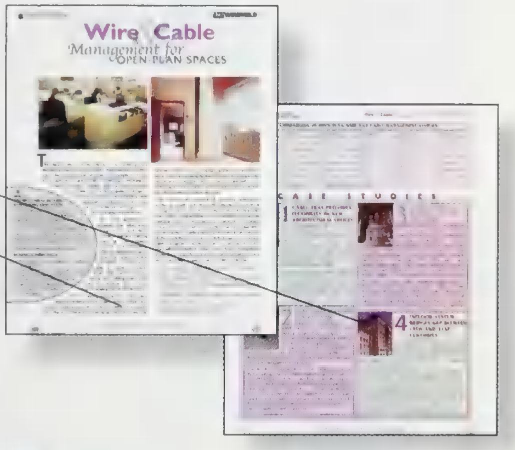
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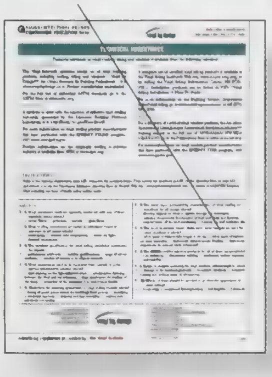

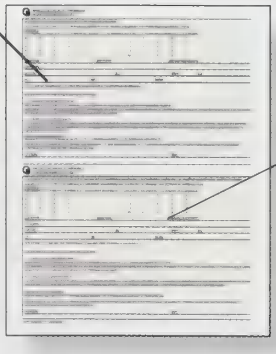

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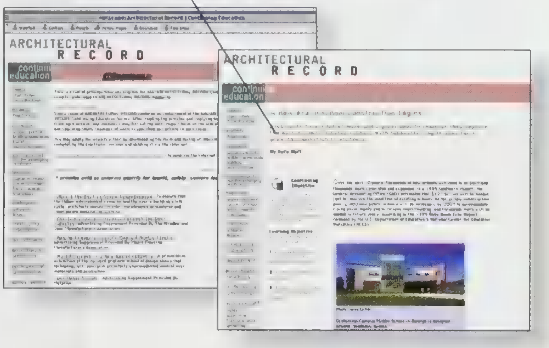
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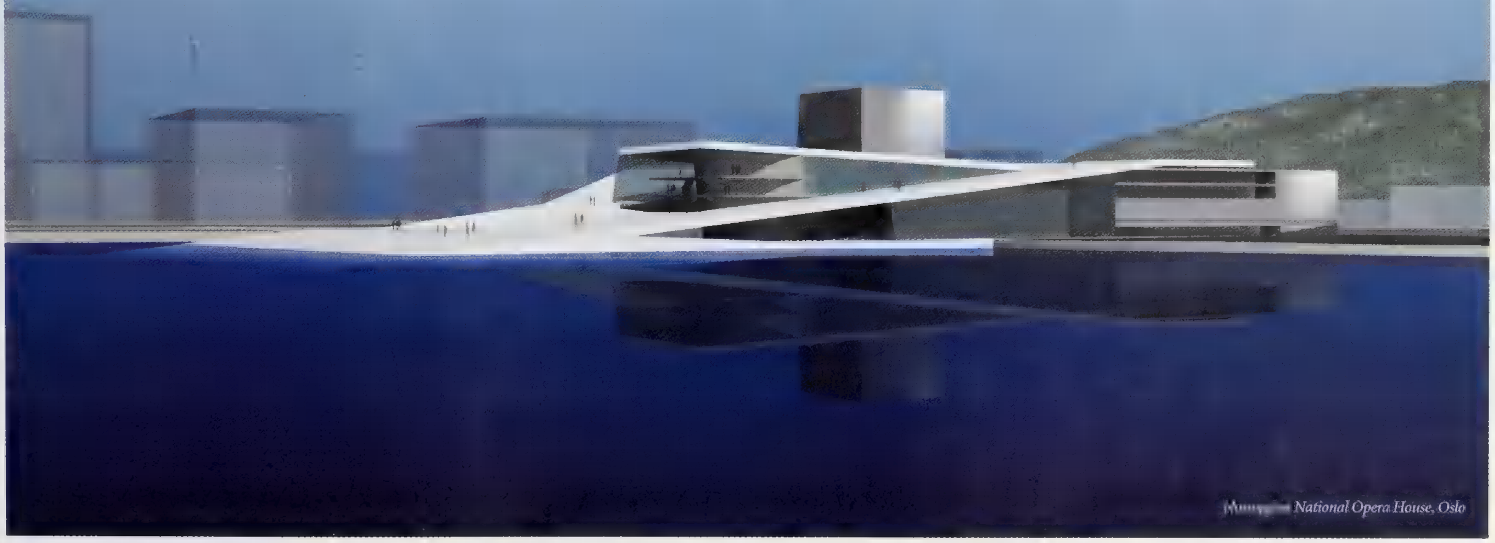
A reception will follow the lecture and discussion.



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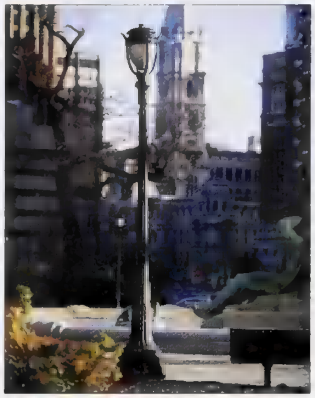

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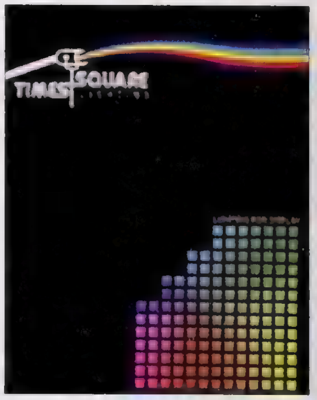

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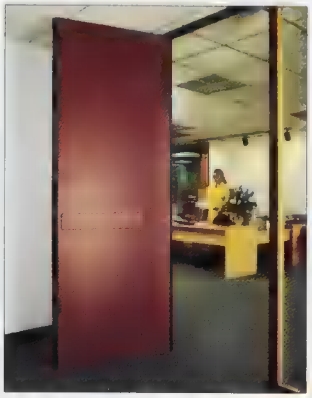

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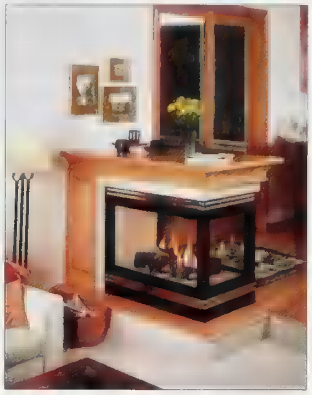

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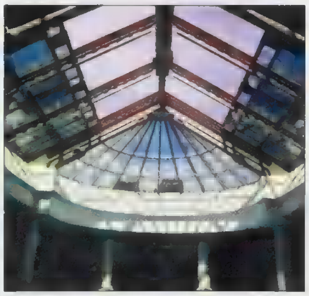

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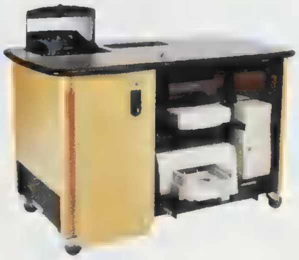

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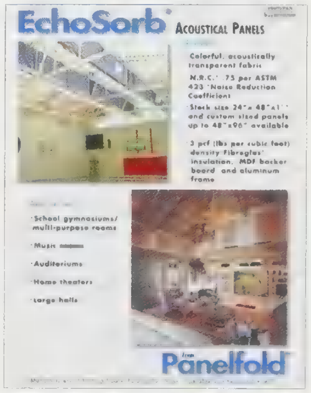
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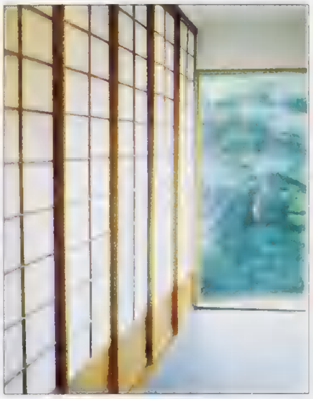

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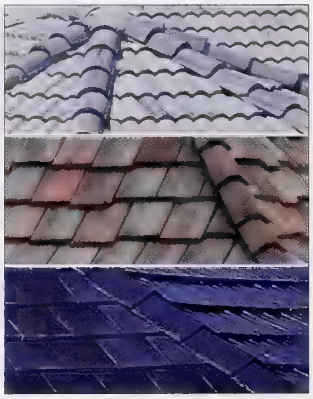

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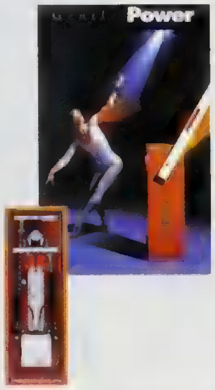

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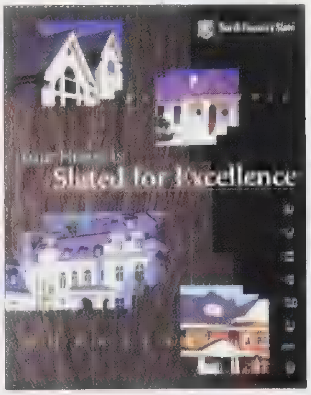

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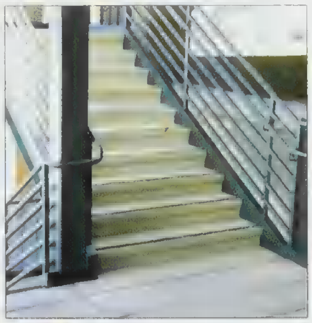

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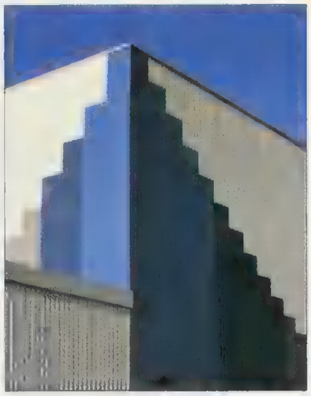

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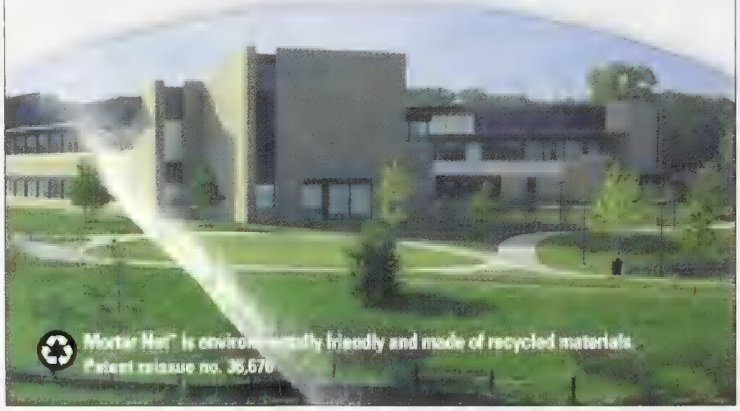
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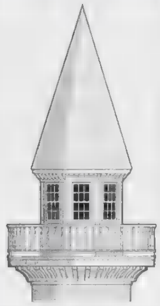

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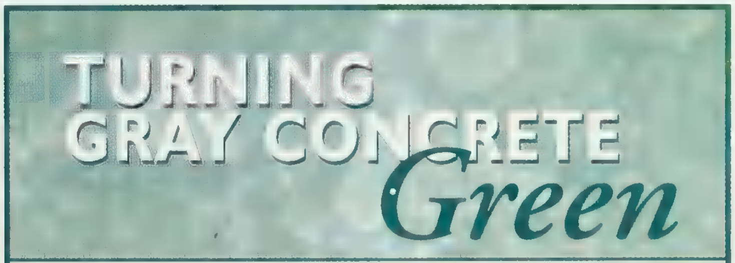

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Profile

Topher Delaney: Healing the world, one garden at a time

Interviewed by Elizabeth Harrison Kubany

After she was diagnosed with breast cancer, Topher Delaney, a San Francisco–based artist and landscape designer, made a pact with God. If she survived, she swore she would devote her work to helping others heal. Now, almost a dozen years later, Delaney has created a specialty in the design of healing gardens for hospitals and sanctuaries for residential and business clients. A new book, Ten Landscapes *(Rockport, 2001), displays some of Delaney's residential projects, which, like her institutional work, is as colorful, upbeat, and unorthodox as the artist herself.*

Q: *What is your work about?* Everything I do, whether for a hospital, a business, or a residence, is about comfort, healing, and faith. When I was beginning my career, landscape design appealed to me as a form of sculpture and as a way of showing my commitment to the environment. It seemed to be the perfect combination of art and civic responsibility. What I have realized along the way is the tremendous power gardens can have on people's psyches. My work, it seems, is always a series of programmatic responses to complex emotional issues.

For example? I designed a roof garden for the Bank of America building in San Francisco. The company was struggling with personnel issues because they have many employees who work more than one job and are always exhausted as a result. They have many computer programmers who never see the light of day. So we made an active environment using recycled materials, with generous benches where people sleep during their breaks. It is like a private sanctuary for every employee.

Sanctuary does seem like a better word than garden or landscape for what you create. The word garden, from the German *garten*, originally meant enclosure. So if you think about this in a metaphysical way, a garden should be more than just a pretty object. It should be like an embrace.

The issues of people suffering from cancer are something you can relate to all too well, it seems. Being in a hospital is a terrifying process because you lose control over your own body. When you have a cancer, it is a long-term proposition. For months, sometimes years, there are significant, invasive courses of treatment. I created a garden at the Marin Cancer Institute where I used the source plants for the different pharmaceuticals employed to treat cancer. For instance, the plant *catharanthus roseus* is used to make Vinblastine Sulfate and Podophyllin is made from *phodophyllum peltaltum*. We created a booklet with a descriptive narrative that people can use to educate themselves while enjoying the spaces. In the act of learning about their treatment, people regain some sense of control over their destinies.

What are you working on now? I just returned from New York. I've designed a memorial for those who died on September 11; not for the site of the World Trade Center, specifically, but for all of Lower Manhattan below Canal Street. The idea is to present the family members with an index of species of trees that currently thrive in Manhattan and to let them choose the kind of tree they'd like to memorialize their loved one. Each tree would have a plaque with the name of the person who perished and his or her age and hometown, or some other text. This would celebrate the memory of those killed, and also be a gift of hope to the city. A tree is a wonderful symbol of the future.

Photograph courtesy SEAM/Topher Delaney

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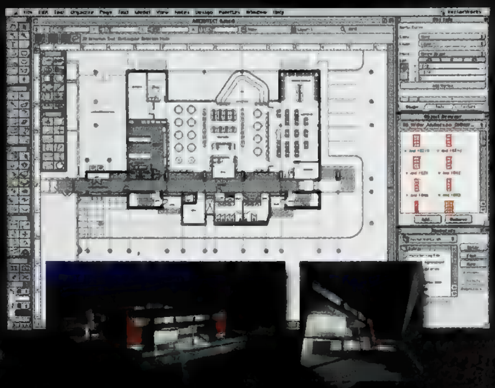

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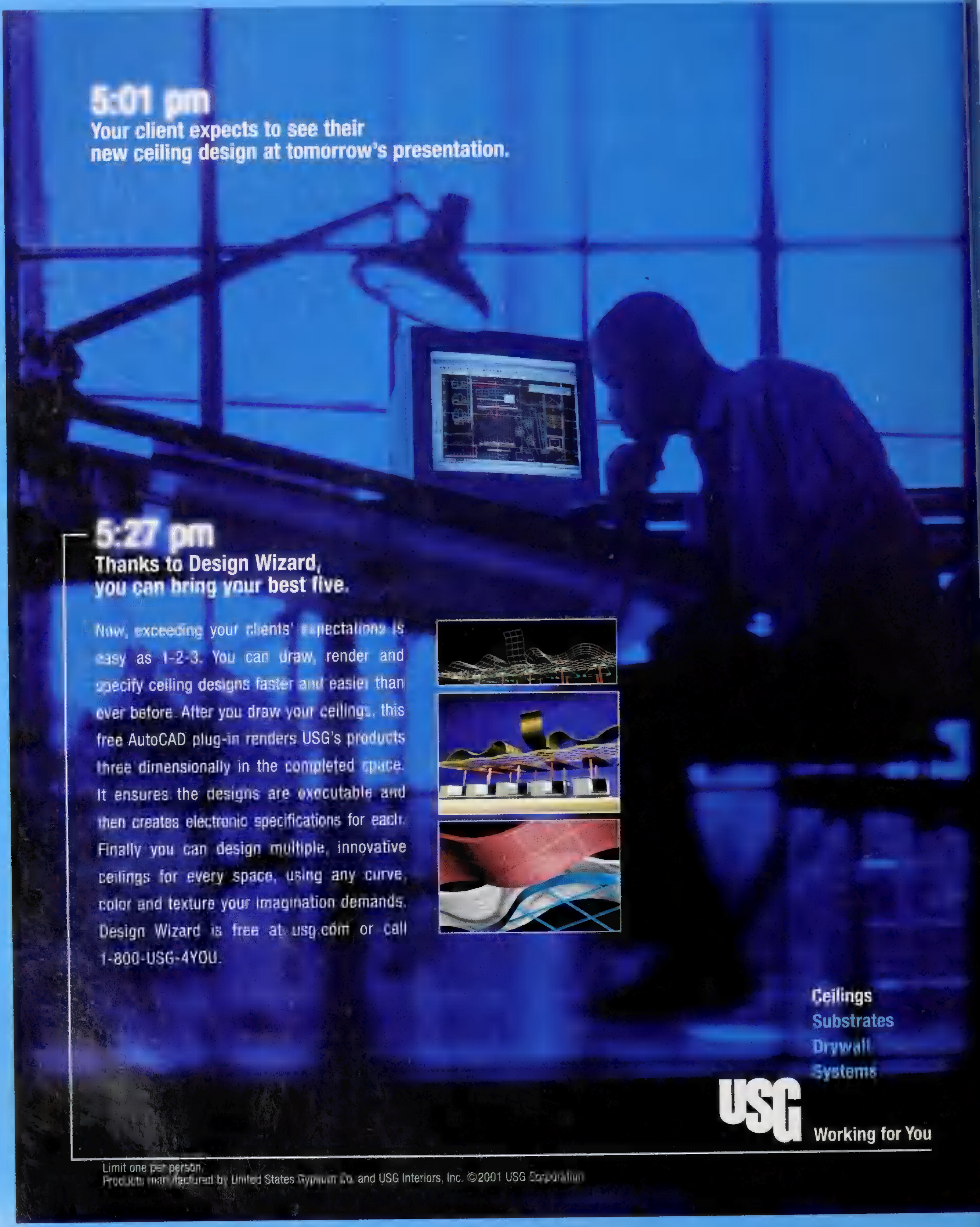

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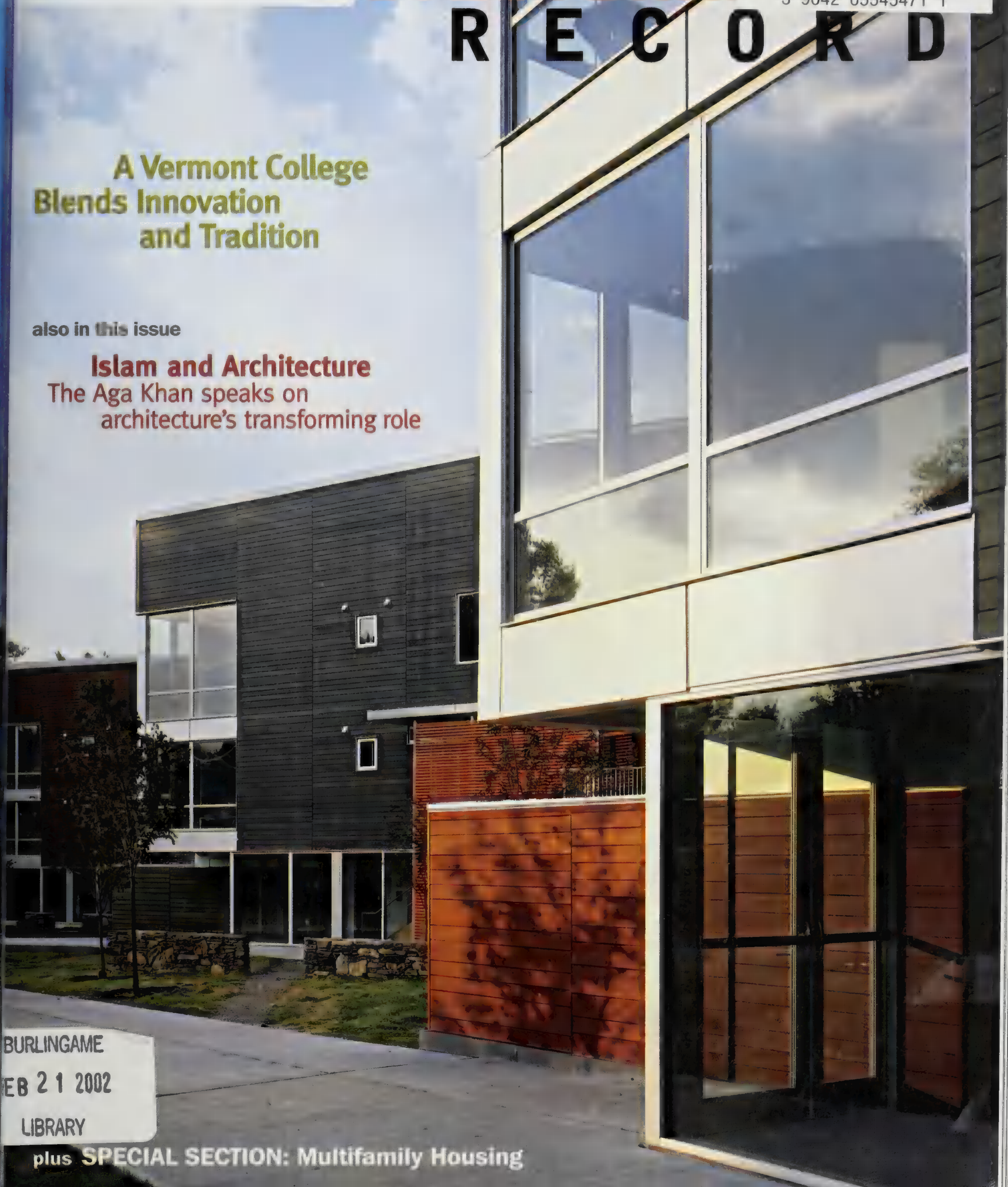

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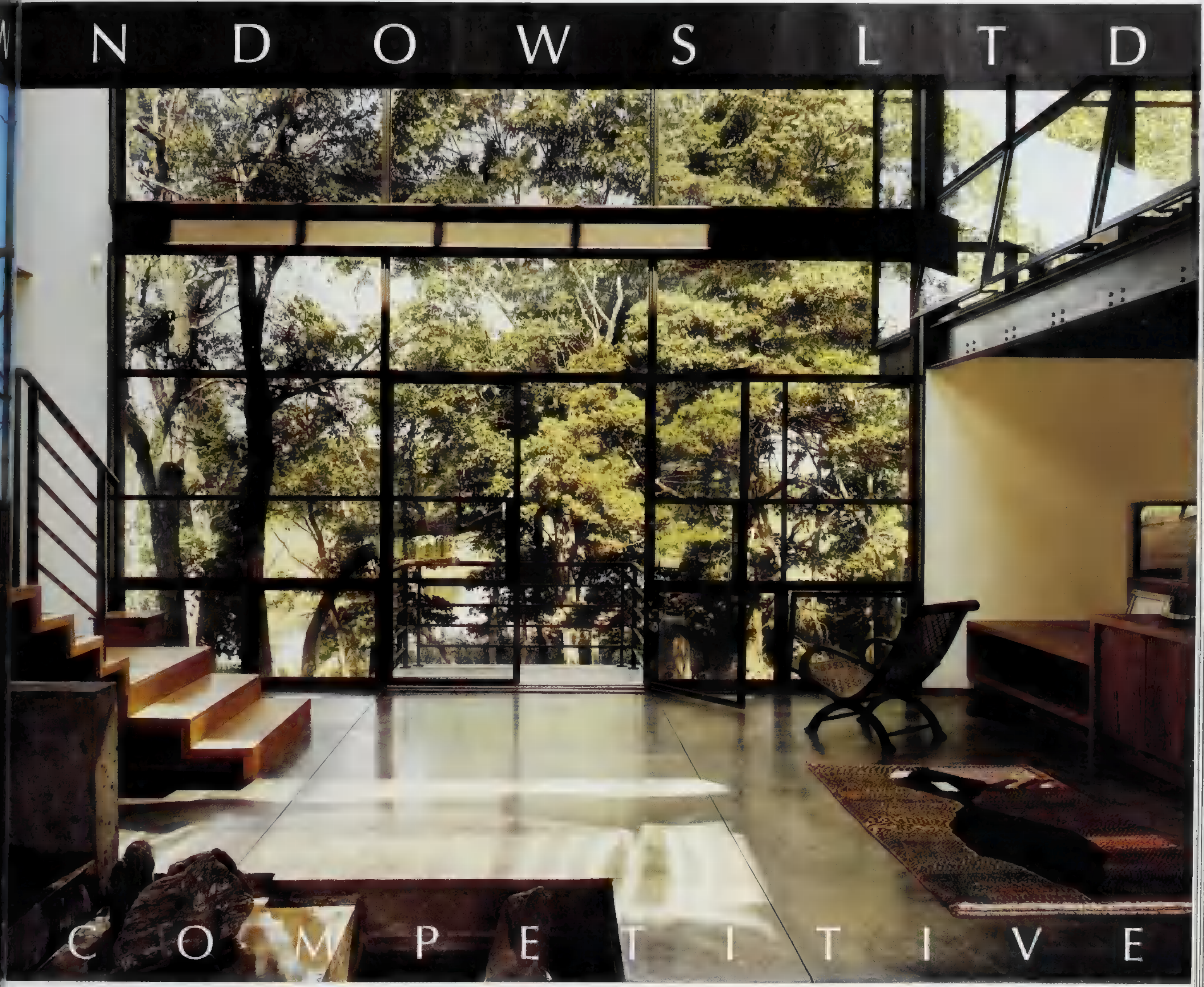

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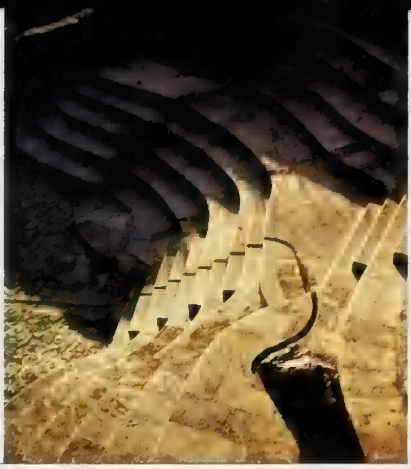

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Right: *Aga Khan Award–winning Ait Iktel, in Morocco, by Ali and Mohamed Amahan, photographed by G.R. Pasban*

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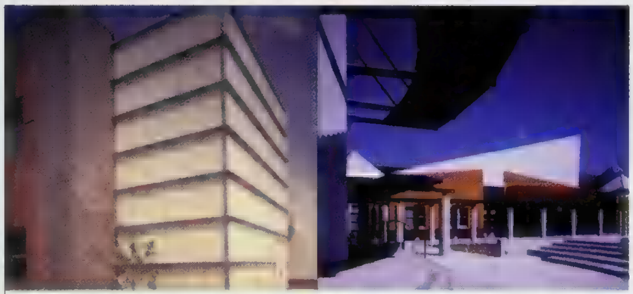
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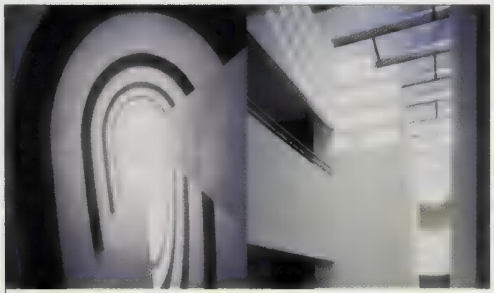
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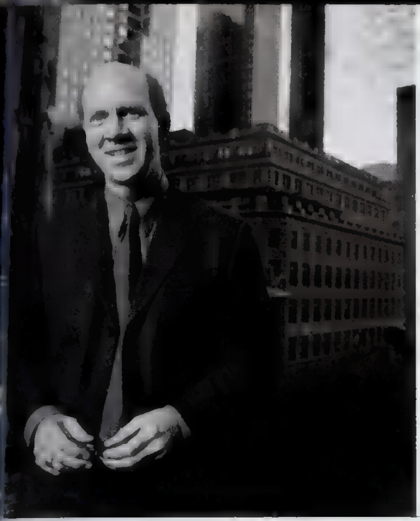

Editorial

A man like an oak

By Robert Ivy, FAIA

When Sam Mockbee died, somewhere down South a tree fell—big as an oak, a 57-year marvel in its own place, it drew sustenance from generations of loam and deep water, weathered storms and bent and grew broad, threw off shade and color for all that came and sat beneath it, sheltered all comers, an elemental force that rained out new growth, and, on December 30, returned to its own soil.

If art is seeing and making, to an uncommon degree Sam Mockbee had the soul of an artist. Although a gifted tale-teller, Sambo's métier was not the written word, the usual currency of his region, but graphic and plastic expression. "You know, what I really love to do is make prints," he confessed in a honeyed drawl from a porch swing more than 20 years ago, after hearing Mississippi writers Shelby Foote and Ellen Gilchrist read from their own work. In the studio, this bearded, Richardsonian man lightly skimmed over a drawing board in a far corner of the room, apparently burning with his art, perpetually encircled by a haze of smoke from colored pencils and spray paint and student breath; then the drawings would emerge from a messy pile of tracing paper and blow the room clean.

His elemental love of making art, of looking fearlessly and closely at his own world, translated over time into three-dimensional architecture for people. His houses for the affluent, fiercely unsentimental and rooted in contemporary culture, were complex, unfashionable, personal interpretations that drew inspiration from vernacular traditions—including galvanized roofs, rusting metal scraps, dogtrot forms, porches—and recast them into jazz. Sambo found his voice and made the South sing again.

With that same level gaze, this iconoclast, a humorous, self-described "subversive" who was "going to war," saw injustice. Down the back roads of his native region lay shacks with plastic sheeting for doorways, where a reluctant hand would draw the curtain, hiding its private troubles from passersby. Consistently, unapologetically, Sambo raised the curtain and went inside. Although he had grown up in segregated Meridian, Mississippi, just an hour from the earthen dam that once held the bodies of civil rights martyrs, Mockbee came of age later in the army, where he confronted a richer, more racially multidimensional world: His art and his architecture had discovered their subject.

Early on, his work stood apart. In the late 1970s, his practice in Jackson, Mississippi, included formally powerful, simple churches and residences. After winning a Progressive Architecture Award for a series of small houses for the rural poor in Madison County, Mississippi, where he lived with his own family, he eventually founded Auburn University's Rural Studio with D.K. Ruth. Based in part on Clemson University's semester in Genoa, Italy, Mockbee improbably reinvented the semester abroad for Hale County, Alabama, a land drenched in sunlight and greenness and rich soil but blighted by persistent poverty.

Sambo's "Redneck Taliesin" raised the temperature in the humid little town and attracted the students. The Rural Studio, which soon garnered international attention, required total engagement of student and teacher (including residency, first in a Faulknerian mansion in Greensboro, later at a farmhouse in Newbern). In a way their mothers never could have imagined, students cooked and cleaned; studied regional architectural history; drew; read literature's great voices; played music; sat up late; met the townspeople; and, especially, planned and built buildings with their hands.

Unusual materials (abandoned tires, shards of concrete, hay bales, and rejected windshields) helped provide uncommon personality and presence for the small structures they made, including houses, chapels, and community centers. Simultaneously, the phenomenon multiplied throughout the country, the Rural Studio flourished, and Mockbee's legend swelled.

In lectures, Mockbee frequently quoted Alberti's dictum that we must choose between "fortune and virtue." Sam Mockbee chose virtue, not as judgmental prissiness, but in a robust, compassionate sense of knocking on doors, finding need, and answering it. By engaging students with authentic clients in Alabama communities, he tapped into the natural optimism of the young, freeing them from the more insular, abstract cynicism and formal obsessions of the design studio. A generation of students, now some 400 strong, inspired by the Rural Studio's social activism, has followed in Mockbee's prodigious wake. His real accomplishment, his real art, may lie outside his artful buildings, in the potential work and lives of those that follow, nurtured and liberated and heading out to build. Who among them might take his place?

Sambo, pax vobiscum.

Robert Ivy

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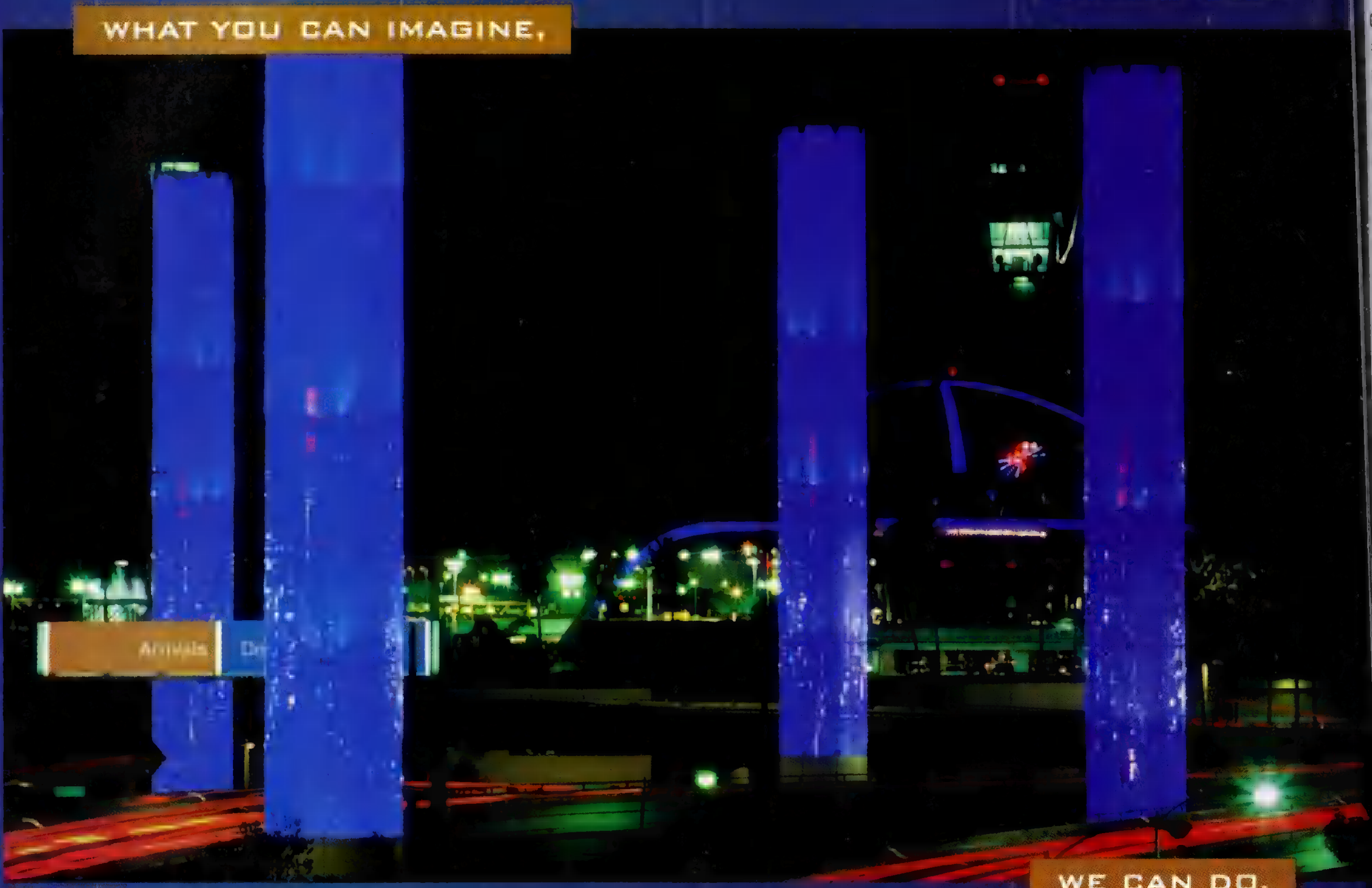

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Letters

Getting it

RECORD's alternating of critics Michael Sorkin and Robert Campbell is a good move that provides readers with depth, balance, and variety of opinion.

The January 2002 issue comes with a bonus: Two thorough and thoughtful reviews in one issue.

On the one hand, Michael Sorkin's lively critique of Prada and Koolhaas & the gang [page 51] suggests to the reader that there is less there than meets the eye.

On the other hand, Robert Campbell's finely detailed piece on the Allston Library by Machado and Silvetti [page 86] persuades the reader that there is more to that work than meets the eye.

Both pieces should prompt readers to visit the actual projects and form their own opinions. Encore, bis! Bravo.

—Jeremy Scott Wood
Weston, Mass.

Not getting it

Would it be possible for you to publish a brief summary after every Michael Sorkin article explaining what it was about?

—Rupert Essinger
San Diego

Research rules

Congratulations to the AIA College of Fellows for taking such a bold step to fund research [Editorial, January 2002, page 15]. When I first was notified of being elevated to the College, I was obviously pleased by the honor but was also pleasantly surprised to learn that the College was more than simply a repository for persons who were AIA addicts. Their program in support and recognition of outstanding young architects and their funding of various efforts to promote architecture were unknown to me prior to becoming involved in the annual business meeting of the College at the AIA convention.

Personally, I want to thank the executive committee of the College for taking this bold step and helping the profession realize our need for serious and important research.

—David S. Collins, FAIA
Via e-mail

A true hero lost

I never went to Greensboro, Alabama, during my time at Auburn University, and I never took Sambo's challenge to spend one night in Shepherd Bryant's leaky shack. But I did learn something about the disassociated world we architects create for ourselves. Your Design Vanguard in the December 2001 issue [page 51] is presented as "new emerging architects challenging the status quo." They are undoubtedly a talented group, but in the wake of Samuel Mockbee's death, I find it hard to accept the speculation that they are challenging the status quo. Sure, they are going without sleep, but as we have all been trained to do, they are building their résumés by doing work for those who are blessed enough to be able to afford it. This is not a devious quest, but it is also not a new one. Though you may call it "edgy," digital blobs and talk of hyperculture are the status quo, not a challenge to it. It may be pushing technology, but it's not all that different than the rat race that all architects run. Sambo used the power of architecture to do real good, and he was the closest thing to Robin Hood that we had. He is receiving much praise now, but he spent many years doing things that don't show up on magazine covers. Our heroes who "challenge" the status quo should truly be reevaluated, not on the status quo that we create for ourselves in our aloof, little subculture, but on the status quo that becomes evident after spending a December night with Mr. and Mrs. Bryant—a true challenge that few of the Design Vanguard would take.

—Thomas G. Pollman
SMBW Architects
Via e-mail

Having it all

Regarding the October 2001 editorial "Shaking Off the Terror" [page 21], I agree with the proposition that the September 11 attacks will not be the end of the skyscraper. But I disagree with the implicit suggestion that we have to make a stark either/or choice between dense city centers with high-rises and dispersed suburbs. Why do we have to choose one or the other? Why can't we have both?

Where I live in upstate New York, I can easily visit denser downtowns up to a half-hour's drive from my house, even though I live on a one-acre lot in a suburban neighborhood. True, Cortland, Ithaca, and Syracuse are not major cities, yet my familiarity with their city centers demonstrates that one can live in a suburban setting and still frequent a denser area quickly and conveniently. Why can't the same apply to major cities? After all, I'm already sure thousands, if not millions, of the people who work in Manhattan's high-rises live in the suburbs outside the city and commute in regularly. There are those, like Mr. Ivy, who prefer the city over the suburbs, and others who are just the opposite. Instead of trying to pick and choose between the two extremes of city center and suburbs, the sensible approach to urban planning is to embrace *all* the possible building types and development patterns possible in the metro region, so that people can have their choice of where to live and where to work, and travel between the different types of areas so quickly and conveniently that no one thinks twice about it.

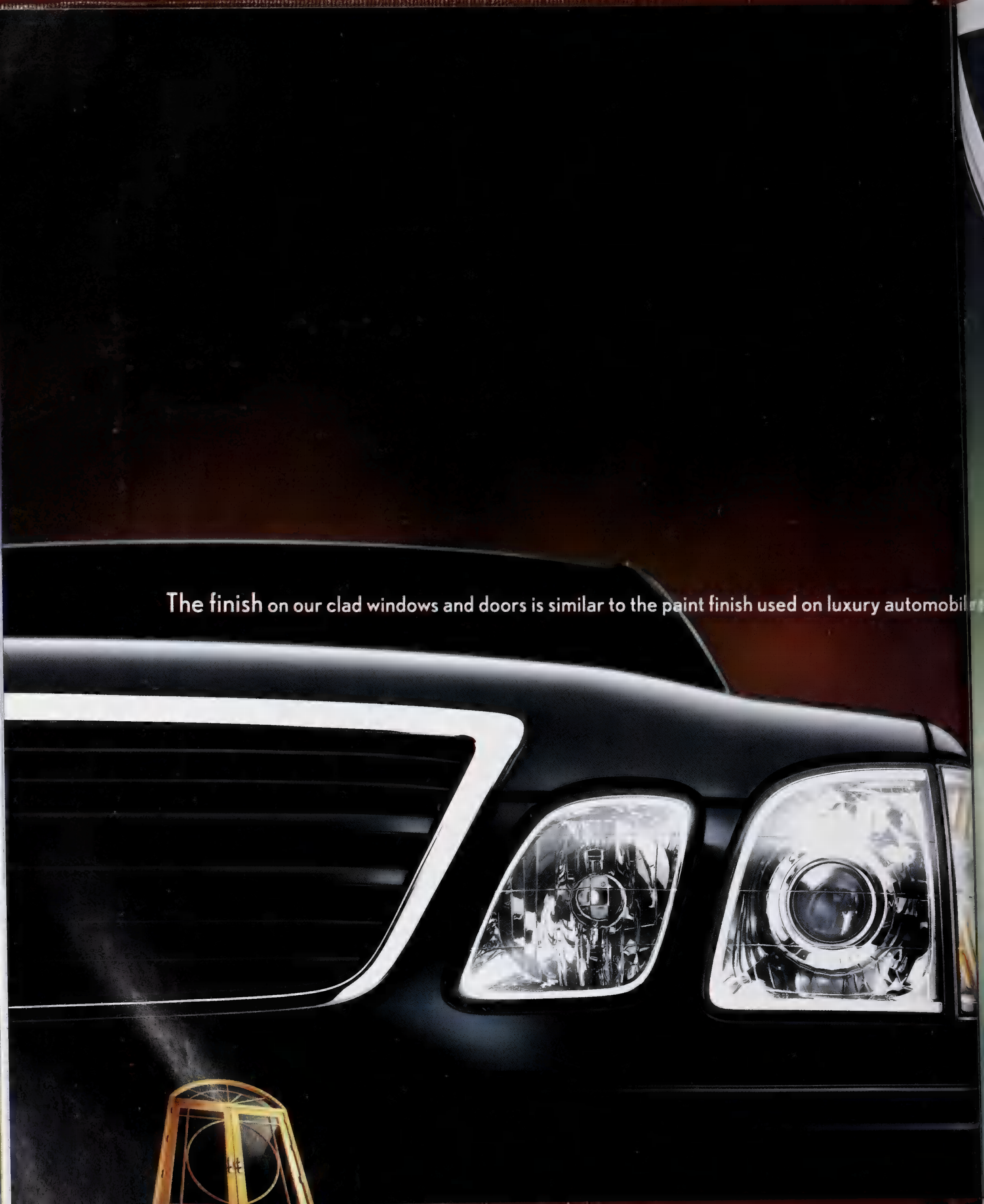
Of course, this approach won't sit well with those who have committed themselves to dense cities or dispersed suburbs as the sole answer to our problems—but, hopefully, relatively new technological innovations will make the debate moot. As I see it, new concepts such as providing shared cars or station cars for transit riders (gocarlink.com) won't work as advertised if there is only *one* dominant development pattern. All high density, and there's nowhere to go by car; all low density, and the mass-transit components don't work. Only by having a variety of development patterns and building types relatively close to each other, integrated as a whole from the start, will such a system work.

—Michael J. Gallagher
Cortland, N.Y.

Corrections

Gary Edward Handel + Associates is the local architect working with Jean Nouvel on the three-building complex in New York City's Meatpacking District noted in the December 2001 issue [page 30]. Also in that issue, the portrait of SYSTEMarchitect's principals [page 74] and the Day Care/Youth Center in Berlin [page 76] should have been credited to Elizabeth Felicella Photography. The Universal CityWalk in Orlando featured in the Lighting section of the November 2001 issue [page 195] should have been credited to The Jerde Partnership International for concept design. Also in November, Kahler Slater Architects and East Wing Architects (a joint venture of Kahler Slater Architects and Isthmus Architecture) should have been given credit as restoration architect for the Wisconsin State Capitol [page 100].

We appreciate your comments and welcome your letters. Please send letters via e-mail to rivy@mcgraw-hill.com.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Record News

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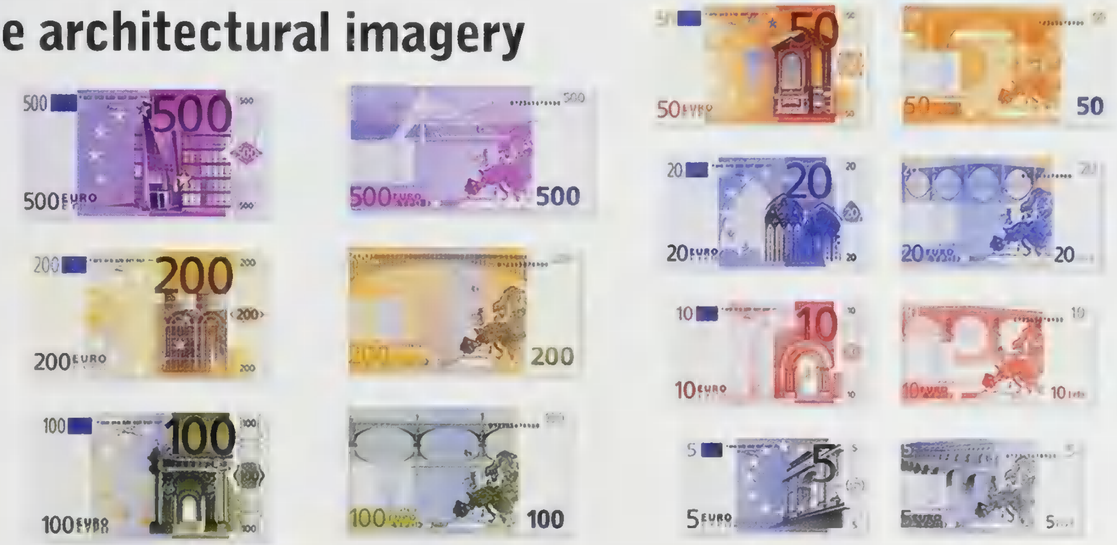
Sam Mockbee dies p. 34

Euro bills feature architectural imagery



Euro banknotes include windows and gateways on the front and bridges on the back, based on architectural periods.

Stylized architectural imagery is the key design feature of the seven euro bills that entered circulation in 12 countries on New Year's Day. Under the European Central Bank's broad theme of the "Ages and Styles of Europe," the banknote design had to be faceless and (relatively) placeless—images could not be associated with any particular country. Text is minimal on the banknotes, and, unlike the euro coins, the bills do not have a national side.

Each denomination represents a different architectural period. The 500-euro note depicts modern 20th-century architecture, 200 represents "the age of iron and glass architecture," 100 is Baroque and Rococo, 50 is the Renaissance, 20 is Gothic, 10 is Romanesque, and 5 is Classical.

Windows and gateways on the front of each banknote symbolize a spirit of openness and cooperation. The reverse side has an image of a bridge, also symbolizing cooperation and communication between European nations and the rest of the world.

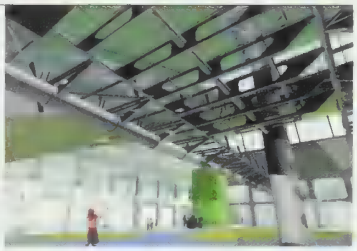
Bridges, windows, and gateways had to be generic—drawings were altered to be more generic if the architectural elements closely resembled those that are particularly well known. On the 5-euro note, however, the bridge structure appears quite similar to the Pont du Gard in France.

John E. Czarnecki, Assoc. AIA

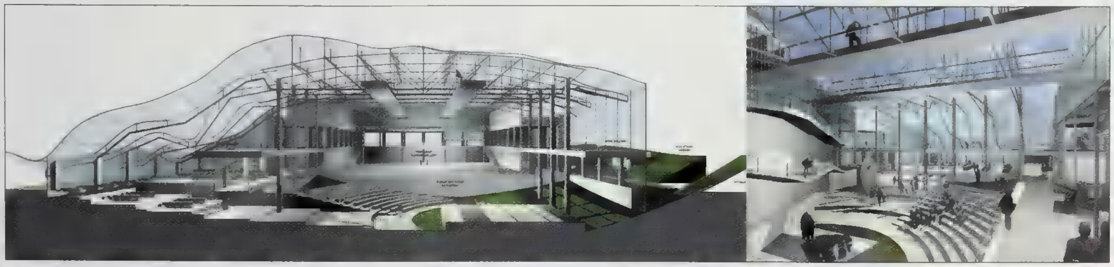
Eric Owen Moss wins Queens Museum of Art project, his first in N.Y.C.

The New York City Department of Design and Construction has selected what juror Merrill Elam, AIA, called the "Here-I-Am!" competition entry by Eric Owen Moss Architects of Culver City, California, to renovate and expand the Queens Museum of Art in Flushing Meadows. This will be the first New York project for Moss, the newly named director of SCI-Arc, and his largest cultural commission.

The museum occupies half of the New York City Building—the only surviving structure from the 1939 and 1964 world's fairs. Moss's design replaces the central third of the building with a rippling drape of glazing over an atrium and a multi-use space called "the bowl." Earth excavated from the bowl forms what Moss calls a "magic mountain"—a berm that acts as shield and sign for the museum along the adjacent Grand Central Parkway. A former ice-skating rink will be transformed into 12,700 square feet of free-span, double-height temporary exhibition space for contemporary art. This space, along with new administrative and education suites, will double the museum's size to about 100,000 square feet. Evidence Design of Brooklyn was selected for second place, and third place went to Hanrahan + Meyers of New York. The other finalists were New York firms Salazar Davis Architects and Fox & Fowle Architects.



The Evidence Design entry.



The museum design by Eric Owen Moss includes curved glazing (left) over a gathering space called "the bowl" (right).

Joining Elam on the jury were Ben van Berkel, Susan Chin, FAIA (N.Y.C. Department of Cultural Affairs), Peter Eisenman, FAIA, Carma C. Fauntleroy (Queens Museum of Art), Enrique Norten, FAIA, and Anne Papageorge (N.Y.C. Dept. of Design and Construction).

Thomas de Monchaux

PHOTOGRAPHY: © AP/ECB (TOP); COURTESY QUEENS MUSEUM

OFF THE RECORD

The city of Asbury Park, N.J., has hired Andres Duany, FAIA, to develop a plan for condos around The Stone Pony nightclub that would save the club from demolition. A developer wants the city to condemn the club, which Bruce [illegible] and other rock icons have made famous, so that it can build on the prime waterfront site.

Los Angeles architect Michael Maltzan has been named the second Jon Adams Jerde Visiting Design Professor in Architecture at USC.

The controversial plans to renovate Soldier Field in Chicago will proceed now that the Bears' season is over. Meanwhile, demolition of Mile High Stadium in Denver has begun.

The Guggenheim Museum is considering Rio de Janeiro as the sole site for a possible museum in Brazil. The museum, which sent a team of officials and Jean Nouvel to scout locations in Brazil, had originally considered up to four possible sites for museums in that country.

Cornell University's department of architecture will receive a $20 million gift from the estate of Cayuga County resident Ruth Price Thomas. The gift is the largest that the department has ever received and one of the largest for an architecture program anywhere.

The A+D Museum of Architecture and Design opened in Los Angeles in January. The opening exhibition includes work by Gehry, Morphosis, Venturi Scott Brown, Calatrava, and Moneo.

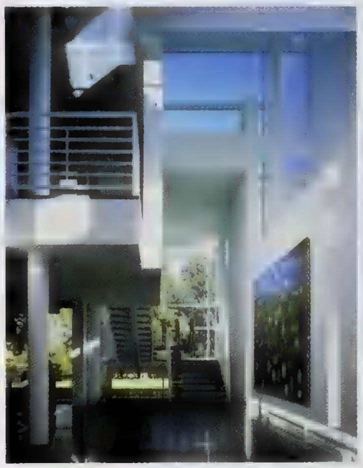
Rafael Moneo has won a competition for a regional government building in Santander, Spain. The five finalists included Peter Eisenman, David Chipperfield, Carlos Ferrater of Barcelona, and Jeronimo Junquera of Madrid.

India has camouflaged the Taj Mahal in preparation for Pakistani air strikes.

AIA Honor Awards announced for 2002

The American Institute of Architects (AIA) announced its 2002 AIA Honor Award winners in January. Fundació Joan Miró, an art museum in Barcelona, Spain, completed in 1975 by the Lexington, Massachusetts, firm of Sert Jackson and Associates, was selected as the 2002 recipient of the AIA's Twenty-five Year Award.

Winners include Rose Main Reading Room Restoration, honors in interiors (above), Fundació Joan Miró, 25-year award (left), and Rachofsky House, architecture honors (below).



PHOTOGRAPHY: © PETER AARON/ESTO (TOP); COURTESY OF THE ARCHITECT (MIDDLE); SCOTT FRANCES/ESTO (BOTTOM)

Honor Awards in Architecture

The 18 Honor Awards in Architecture were given to *Maple Valley Library* in Maple Valley, Washington, by James Cutler Architects/Johnston Architects; *Rachofsky House*, Dallas, by Richard Meier & Partners; *Dayton Residence*, Minneapolis, by Vincent James Associates; *New Barn at Straitsview Farm*, San Juan Island, Washington, by Charles Rose Architects; *Valeo Technical Center*, Auburn Hills, Michigan, by Davis Brody Bond; *Frederick Phineas and Sandra Priest Rose Center for Earth and Space*, American Museum of Natural History, New York City, by Polshek Partnership; *Temples of Industry*, Omaha, by Randy Brown Architects; *Sandra Day O'Connor United States Courthouse*, Phoenix, by Richard Meier & Partners, and Langdon Wilson; *Meredith Corporate Expansion and Interiors*, Des Moines, by Herbert Lewis Kruse Blunck Architecture; *Sony Center*, Berlin, Germany, by Murphy/Jahn; *IN-N-OUT Burger Restaurant*, Los Angeles, by Kanner Architects; *Estuarine Habitats and Coastal Fisheries Center*, Lafayette, Louisiana, by Guidry Beazley Ossteen/Eskew Filson Architects; *International Terminal*, San Francisco, by Skidmore, Owings & Merrill, Del Campo & Maru, and Michael Willis Architects; *Little Village Academy*, Chicago, by Ross Barney + Jankowski Architects; *Rauner Special Collections Library* in Webster Hall at Dartmouth College, Hanover, New Hampshire, by Venturi, Scott Brown and Associates; *Newton Road Parking and Chilled Water Facility*, Iowa City, Iowa, by Herbert Lewis Kruse Blunck Architecture; *The New 42nd Street Studios*, New York City, by Platt Byard Dovell Architects; and *Barn Renovation and Lath House Addition*, Philadelphia, by James Dart, AIA.

Honor Awards in Interiors

The 12 Honor Awards for Interior Design go to *North*, Oklahoma City, by Elliott + Associates; *Vesper Building*, Oklahoma City, by Elliott + Associates; *Qiora Store and Spa*, New York City, by Architecture Research Office; *Old St. Patrick's Church*, Chicago, by Booth Hansen Associates; *Rose Main Reading Room Restoration*, New York City, by Davis Brody Bond; *TBWA\Chiat\Day Advertising*, Los Angeles, by Clive Wilkinson Architects; *International Terminal*, San Francisco, by Skidmore, Owings & Merrill, Del Campo & Maru, and Michael Willis Architects; *XAP Corporation*, Culver City, California, by Pugh + Scarpa; *Smith-Buonanno Hall*, Providence, by William Kite Architects; *Tribune Press Room Renovation*, Chicago, by Perkins & Will; *Sticks*, Des Moines, by Herbert Lewis Kruse Blunck Architecture; and *Tsunami*, Las Vegas, by Morphosis.

Honor Awards in Urban Design

The four Honor Awards in Urban Design go to *Lakeshore East Master Plan*, Chicago, by Skidmore, Owings & Merrill; *The Neighborhood Model: Development Area Initiatives Study* for Albemarle County, Virginia, by Torti Gallas and Partners CHK; *Riverwalk Gateway*, Chicago, by Skidmore, Owings & Merrill; and *A Vision Plan for Pittsburgh's Riverfronts* by Chan Krieger & Associates. *JEC*

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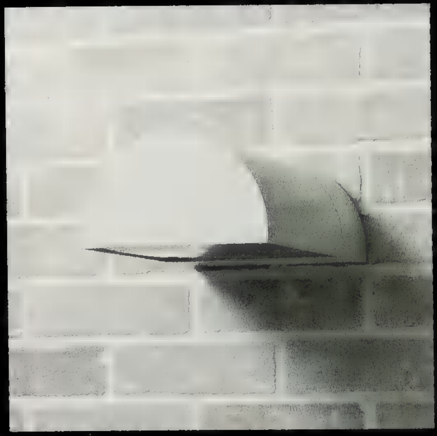

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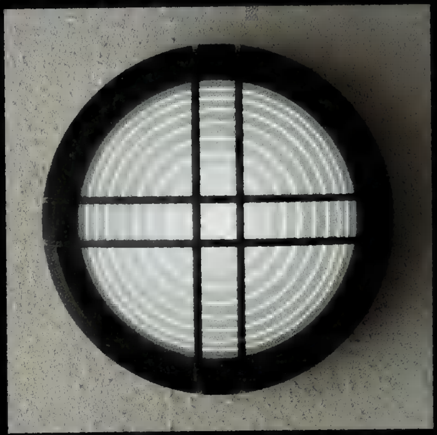

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SPECIAL REPORT

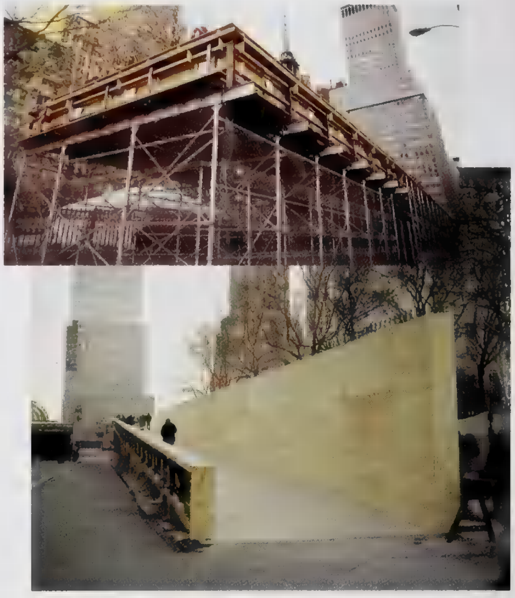
Unlikely collaboration of architects design viewing platform

A group of New York architects not expected to be collaborators combined their design talents and New York know-how to get a viewing platform overlooking Ground Zero designed and built quickly. The platform, which opened to the public December 30, 2001, was designed by an unusual group of architects: David Rockwell of the Rockwell Group, the esoteric Diller + Scofidio, and Kevin Kennon, who recently left Kohn Pedersen Fox as a partner.

Located between Broadway and Church Street adjacent to St. Paul's cemetery, the unpainted plywood ramps ascend and descend alongside a 300-foot-long wall. The ramps lead to a 30-by-50-foot platform, which is 13 feet above ground on scaffolding lent by the Atlantic-Heydt scaffolding company at no cost. Visitors have already personalized the platform with written messages on the guardrails.

Described by the architects as a "dignified place for reflection," it has been called a "disruption to local residents" by the local community board because of the thousands of visitors flocking to the site. The huge crowds have prompted the need to distribute tickets to visitors for a designated viewing time.

Many architects had the idea for a viewing platform, Elizabeth Diller of Diller + Scofidio conceded. But this team, namely through Rockwell, had the contacts to make it happen. Rushed through the normally slow permit process, the platform was funded by a $175,000 bridge loan from television producer Norman Lear and private donations, including $100,000 from Larry Silverstein, the developer who owns the lease on the World Trade Center site. Three more platforms are planned and await funding. *Alexander Gorlin and JEC*



The viewing platform is reached by 300-foot-long ramps on either side of a plywood wall.

New York New Visions coalition makes recommendations

New York New Visions, a coalition of 20 design, architecture, planning, and engineering organizations, including the New York chapter of the American Institute of Architects (AIA), has released a working draft of recommendations for the rebuilding of Lower Manhattan. The 52-page document, prepared by some 350 professionals and civic group leaders, outlines key areas of concern.

The coalition advocates an open, inclusive memorial process that would seek ways to honor the dead while still rebuilding a vibrant neighborhood. As for rebuilding, the report's primary message is that replacement in kind is not the best the city can do. The report suggests creating a comprehensive plan, including broad assessment of transportation and connections to the rest of the city and the region. A land-use section stresses the importance of a wide range of uses to spur and sustain vitality. In calling for design excellence, the authors state that, to be a design leader, the city must enlarge the definition of quality design to include "high performance and environmental sustainability at every level."

Rick Bell, FAIA, executive director of the AIA New York chapter, is cautiously optimistic. He notes that the board chair of the Lower Manhattan Redevelopment Commission, John C. Whitehead, "has not talked about slicing up the site into development parcels, nor has he mentioned leaving large areas unbuilt. But we have heard him talking about mixed-use and comprehensive planning."

Visit www.newyorknewvisions.org for the complete New York New Visions report. ***Kira L. Gould***

PHOTOGRAPHY: © BLANDON BELUSHIN

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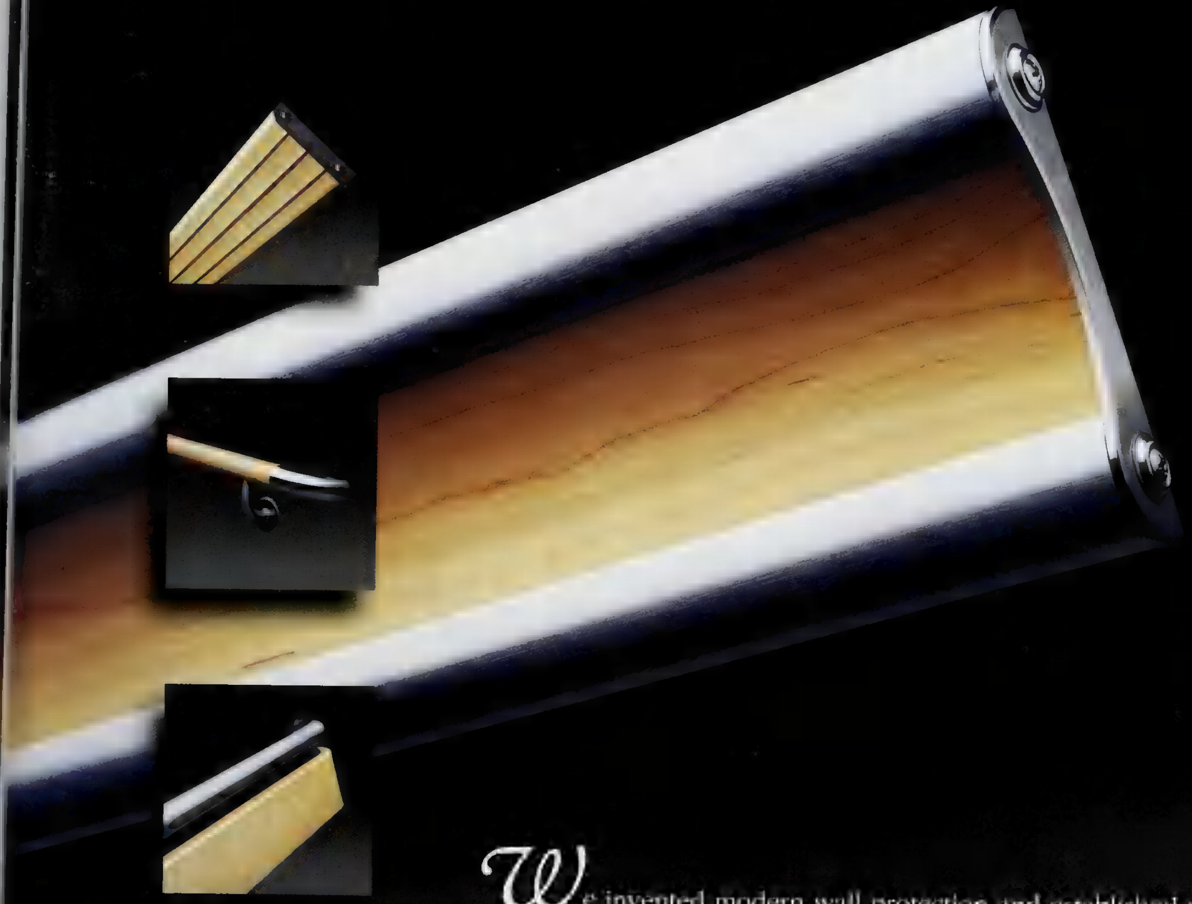

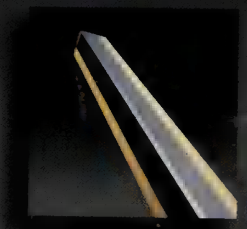

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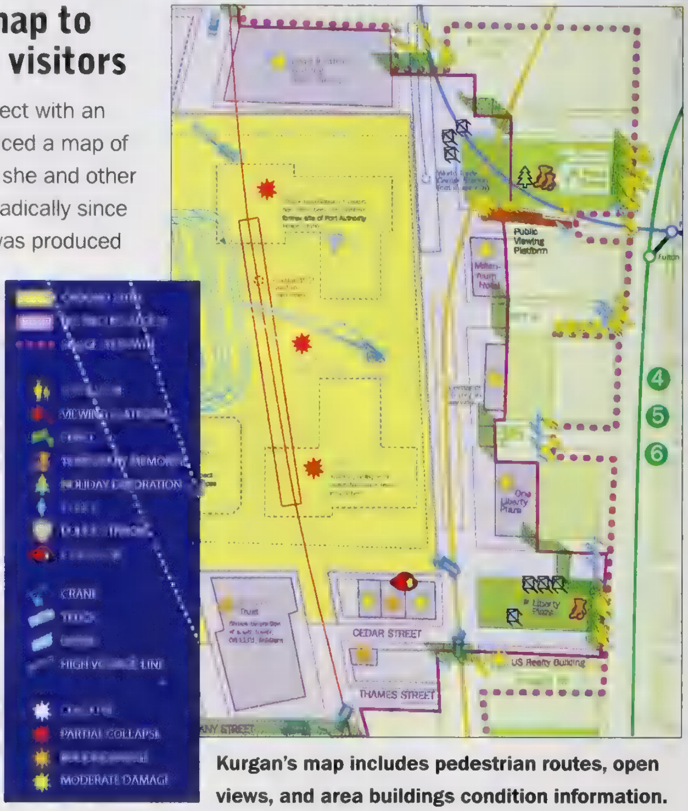
SPECIAL REPORT

Architect creates map to orient Ground Zero visitors

Laura Kurgan, a New York architect with an independent practice, has produced a map of the World Trade Center site that she and other volunteers have distributed sporadically since December 28, 2001. The map was produced under the auspices of the temporary memorials committee of New York New Visions (see page 26), a coalition of New York design and planning organizations.

Kurgan felt that her skills would be useful for the Trade Center site. "I wanted to provide a different framework for people who were just going down there to gawk," she said. Her map aims to end confusion by showing open views, temporary memorials, and the conditions of various buildings. Kurgan also hopes that the map will help to change the nature of visitors' trips to the site. "I don't see what people are doing as tourism," she said. "I see it as a part of the memorial process."



Kurgan's map includes pedestrian routes, open views, and area buildings condition information.

MAP COURTESY LAURA KURGAN

Kurgan plans to update the map as the boundaries of the site change. She is also seeking funds for a second print run of 100,000 copies to supplement the original 20,000. Donors for both print runs include the New York chapter of the AIA, TBWA\Chiat\Day, the New York Foundation for the Arts, the Van Alen Institute, and anonymous donors. *Kevin Lerner*

As cleanup continues, planning process for WTC on fast track

The cleanup at the World Trade Center (WTC) site is progressing at a faster rate than initially predicted. As a result, the planning process for the future of the site is also moving forward quickly.

Initially estimated to cost between $1 billion and $2.5 billion and to take one year to complete, the cleanup is now estimated to cost $750 million and to be completed in nine months. As of mid-January, more than one million tons of debris had been removed from Ground Zero, with 600 trucks removing 10,000 to 15,000 tons daily. When the cleanup is over, the likely debris total will be 1.5 million tons.

Developer Larry Silverstein has selected Skidmore, Owings & Merrill (SOM) to design a new 47-story 7 World Trade Center building, which would be built in the same location as the previous 7 WTC. Pending approvals, Silverstein has said he wants to begin building 7 WTC this year.

Public hearings on developing the rest of the site are expected to begin in February or March, and a plan will likely be in place shortly thereafter. SOM and Cooper, Robertson & Partners are advising Silverstein, although he has not named architects for the rest of the redevelopment. *JEC*

WWW For continuous updates on the aftermath of the September 11 attack, visit our special section at: **www.architecturalrecord.com**

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U.S. Senate Library renovated by Meyer Scherer & Rockcastle

An expansion and restoration designed by Minneapolis firm Meyer Scherer & Rockcastle (MS&R) has helped redefine the U.S. Senate Library, formerly a quiet chapel of solitary contemplation, as an accessible library for the senators and staff.

MS&R recently completed the renovation under the supervision of the Architect of the Capitol, Alan M. Hantman, FAIA, and senior project architect Kara A. Schonberger. Jeffrey Scherer, FAIA, was principal in charge for MS&R and Patricia Fitzgerald, AIA, was the project manager.

The renovation included the three rooms in the U.S. Capitol building (below right) that have served as the U.S. Senate Library since 1870. Originally the home of the Library of Congress, the rooms were designed by Benjamin H. Latrobe in the 1810s. Before the renovation by MS&R, a fireplace was hidden, murals were in disrepair, and bookshelves covered every available wall space. The MS&R work recovered and restored the fireplace and murals, and updated mechanical, electrical, and communication systems. New details were sensitively designed, including air diffusers that were discretely placed within the top of mahogany perimeter shelving.

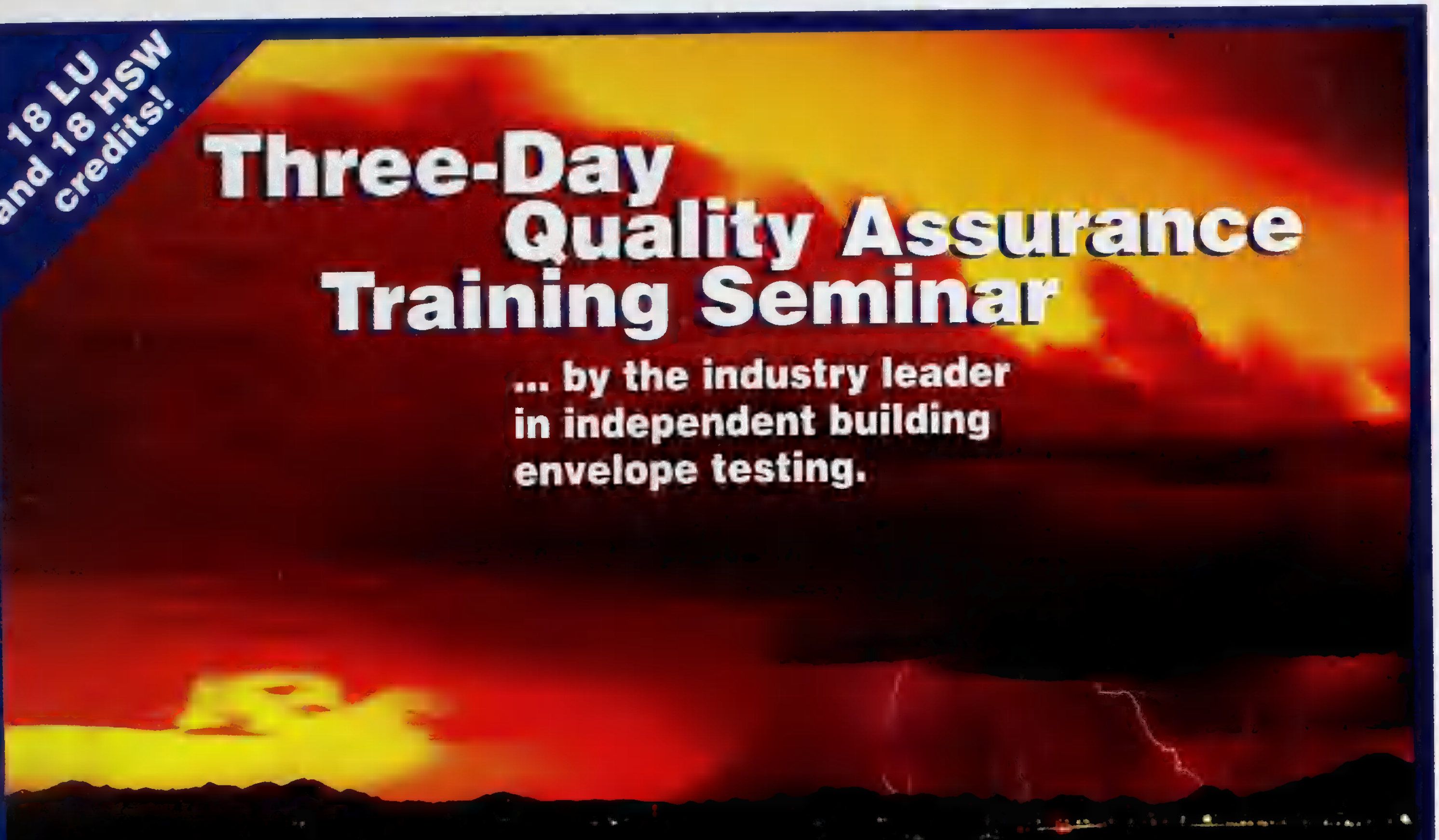
The Senate Library includes a new basement reference area (top) and a restored reading room (above).

To handle the library's expanding collections, MS&R designed an expanded reference area and storage in what had been a hodgepodge of office and storage space in the Russell Senate Office Building basement (top right). A combination of direct and indirect lighting was implemented to reduce glare. "The design challenge was to carve out lofty space using rich materials and exceptional lighting, while providing superior function," Fitzgerald says. *JEC*

Lessons learned in anthrax contamination

As Secretary of the United States Senate, Jeri Thomson (right) has had an extremely challenging first half-year on the job. In that role since July 2001, Thomson is the Senate's chief legislative, financial, and administrative officer. She had to make quick, decisive choices in the wake of the anthrax contamination of the Hart Senate Office Building, which was closed from October 17 to January 22. Thomson shared the lessons she learned at the symposium "Freedom Without Fortresses? Shaping the New Secure Environment" [JANUARY 2002, page 26] that RECORD cosponsored at the National Building Museum in Washington, D.C., on November 27. Among the advice Thomson offered: "We need to provide sensing and alarm systems throughout buildings so that we know what's going on, but we need to do it in such a way that it isn't alarming to the visitors. And these systems should be connected to some kind of a buildingwide stop button that will shut off all air-handling systems. We didn't have that in the Hart Building and it cost us. We also need to provide extremely rapid air-extraction capabilities for rapid response to chemical or biological attack without compromising security." *JEC*

PHOTOGRAPHY: © ANICE HOACHLANDER/HOACHLANDER DAVIS PHOTOGRAPHY (TOP TWO); SENATE PHOTOGRAPHIC STUDIO (BOTTOM)



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Herzog and de Meuron sculpt public spaces in two projects

The exterior of the Laban Dance Center in South London is designed to suggest movement.

In two of their latest projects, one nearing completion in London and the other breaking ground in Barcelona, Jacques Herzog and Pierre de Meuron have sought to create animated urban centers on desolate sites. In the absence of an immediate urban context, they have used the form and program of the buildings to generate outdoor spaces to attract lively public use.

In the case of the $32 million Laban Dance Center, which is scheduled to open in spring 2003 on the banks of Deptford Creek in economically depressed South London, the building volumes embrace a garden that serves as an entry court and neighborhood public space. Home to a school of modern dance, the building's exterior is composed of layers of brightly colored translucent and transparent glass developed with artist Michael Craig-Martin. The glass is designed to suggest movement when seen by a moving observer. An armature of colored polycarbonate tubes provides sun shading. The glass will create a lantern effect at night, projecting silhouettes of dancers rehearsing in the 12 upper-floor studios. By day, the colors will bleed into the building, interacting with the bright colors of many of the interior surfaces. The open-plan ground floor contains a 300-seat theater clad in rough-hewn timber, a library, café, and other public spaces. Three planted light courts penetrate the interior, and three wide spiral stairs will link the two levels and a roof garden.

In the $65 million Forum Building in Barcelona, the architects also use transparent and translucent glass to create a dialogue between the 3,500-seat auditorium and public spaces inside and outside the building. The 300,000-square-foot building, whose final design was unveiled late last year, will serve as the center of activities for Barcelona's International Forum of Cultures in 2004.

The Forum's monolithic triangular form is designed to provide a strong visual anchor to the amorphous open space of the site, atop a raised platform overlooking the Mediterranean. The form was produced by extending the trajectories of nearby streets. The auditorium and its surrounding exhibition space and foyer fill only part of this basalt-clad volume, which also shades extensive outdoor spaces where cafés and other amenities will be installed. Courtyards and rooftop skylights filter natural light to indoor spaces, while pools and cascades of water provide natural cooling. *David Cohn*

The basalt-clad Forum Building in Barcelona (left and below) is being built for Barcelona's International Forum of Cultures in 2004.

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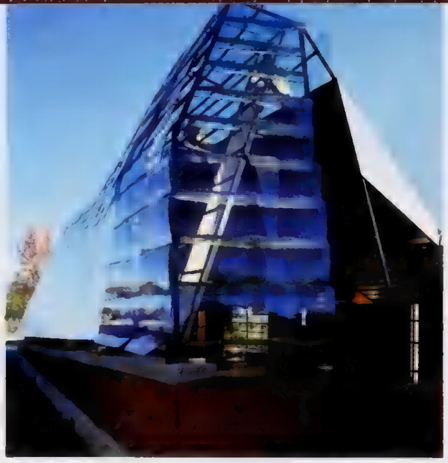
Cofounder of Auburn's Rural Studio, MacArthur genius Samuel Mockbee dies at 57

Samuel Mockbee, FAIA, died December 30, 2001, at age 57 of complications from leukemia. He cofounded Auburn University's Rural Studio with D.K. Ruth and was a partner in the firm Mockbee Coker.

Known to many as "Sambo," Mockbee was one of 25 persons to receive a 2000 MacArthur Foundation Fellowship, familiarly called the "genius award." He is one of only three architects to have ever received that award. In 2001, he won the National Building Museum's first Apgar Award for excellence. A Mississippi native and Auburn graduate, Mockbee cofounded his firm in 1977 with Coleman Coker.

Dan Bennett, dean of Auburn's College of Architecture and a friend of Mockbee since 1978, told the *Mobile Register*: "A lot of people have talent, but I don't know anyone who had the talent that Sambo had with the kind of compassion that he brought to his life every single day."



Mockbee (left), whose Rural Studio designed a community center clad in car windows (above).

PHOTOGRAPHY: © TIMOTHY HURSLEY

In the Rural Studio, architecture students build homes and other structures in Hale County, one of Alabama's poorest, using recycled materials, including salvaged wood, tires, hay bales, and automobile windows. In seven years, the Rural Studio built five houses, two community centers, a playground, and a community chapel based on the premise that beautiful architecture can be both affordable and beneficial. The work of the Rural Studio will be included in the 2002 Whitney Biennial in New York City. (*Rural Studio: Samuel Mockbee and an Architecture of Decency*, a new book by RECORD contributing editor Andrea Oppenheimer Dean and photographer Timothy Hursley, is to be released this month by Princeton Architectural Press.)

In a RECORD interview [FEBRUARY 2001, page 76], Mockbee said, "These small projects designed by students at the Rural Studio remind us of what it means to have an American architecture without pretense. They remind us that we can be awed by the simple as much as by the complex, and if we pay attention, they will offer us a simple glimpse into what is essential to the future of American architecture … its honesty."

Mockbee designed homes for clients across the economic spectrum, rich and poor. He believed the role of the architect was universal—that the home must uplift and inspire, irrespective of the homeowner's economic condition.

Mockbee is survived by his wife, Jacquelyn Johnson Mockbee, three daughters, and a son. *JEC*

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News Briefs

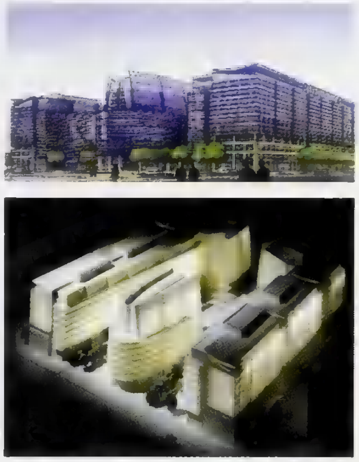
No New York ballparks this year New York mayor Michael Bloomberg announced in early January that construction will not begin this year for new ballparks for the Yankees and Mets. Bloomberg said, “At the moment, everybody understands, given the lack of housing, given the lack of school space, given the deficit in the operating budget, it is just not practical this year to go and build new stadiums.” Bloomberg’s comment came less than two weeks after then-mayor Rudolph Giuliani announced on December 28 that the city had entered into tentative deals with the Yankees and Mets to build new retractable-roofed stadiums for both teams next to their current ballparks. The city would pay half of the cost of each of the $800 million stadiums, which HOK Sport had designed. New York City has a projected $4 billion deficit for next year.

A sports center with gills Construction is scheduled to begin this year on a 130,000-square-foot sports center for the University of Cambridge in England. Designed by Arup Associates, the center will include a swimming pool, sports hall, and indoor tennis facility. The roof form, described as “gills,” will have glazing to allow natural light into the main spaces.

The University of Cambridge sports center will include an indoor pool.

Carl Strauss dies at 89 Carl Strauss, FAIA, perhaps the best-known Cincinnati architect, died January 16 at age 89. The president of Carl A. Strauss & Associates Architects, Strauss designed more than 100 contemporary Cincinnati houses in the past 55 years. Michael Graves, FAIA, worked for Strauss in the 1950s.

Leo A. Daly designs $130 million D.C. development Washington, D.C.–based architecture firm Leo A. Daly has designed one of the largest commercial developments for that city in the expanding NOMA (North of Massachusetts Avenue) Technology District. The First and M Street Investing Company is developing the project, which will turn seven acres of old rail yard into more than 2 million square feet of office and retail space surrounding an anticipated new Metro station. With seven 10- to 11-story buildings, the $130 million complex will house restaurants and shops with underground parking. Although the project is ready for construction, a ground-breaking date awaits the acquisition of individual lots for development. *Carlos R. Perkins*


The Washington, D.C., complex by Leo A. Daly includes seven buildings.

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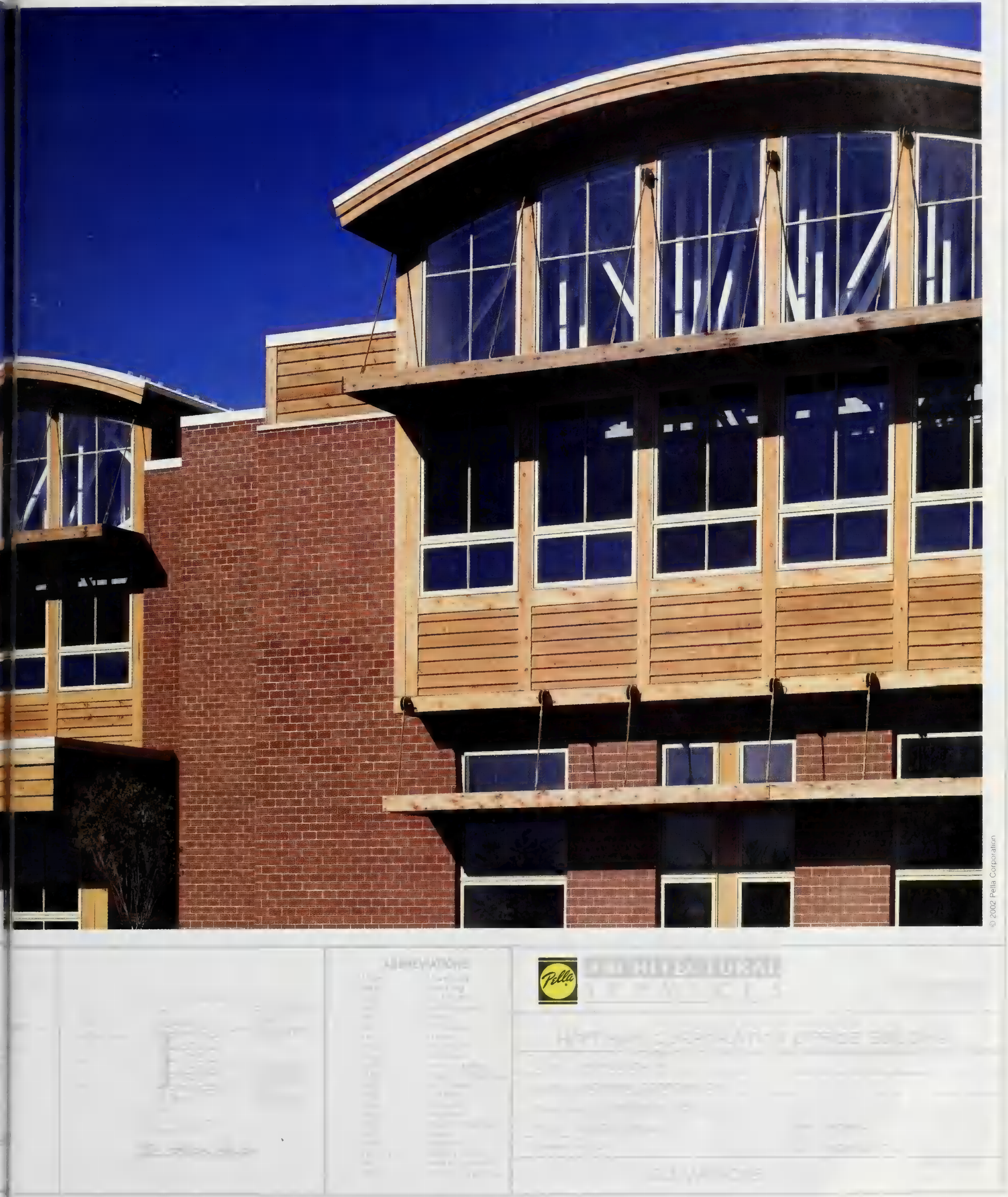

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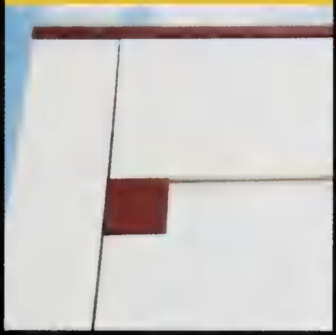

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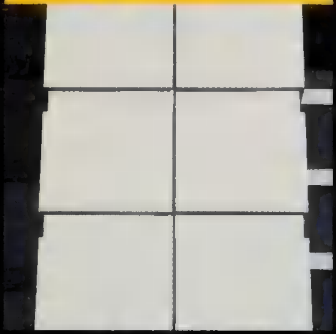

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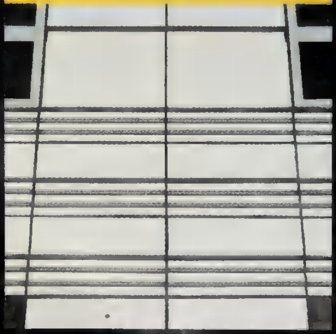

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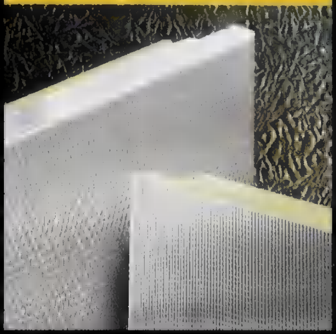

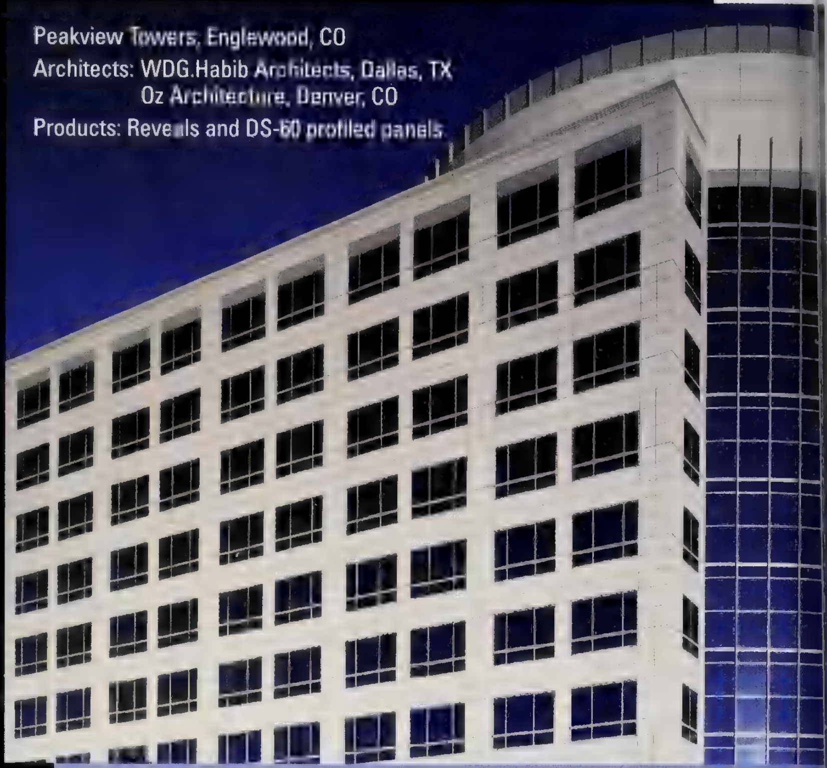

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Dates & Events

New & Upcoming Exhibitions

Mood River
Columbus, Ohio
February 3–May 26, 2002
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WTC: Monument
New York City
February 5–May 5, 2002
As a tribute to the Twin Towers, this exhibition provides an in-depth exploration of the buildings' conception, design, and construction, beginning in the 1960s. It includes a 7-foot-tall architectural model of the towers by WTC architect Minoru Yamasaki, and a film commissioned by the Port Authority. At The Skyscraper Museum. Contact 212/968-1916 for more information.

Mies in America
Chicago
February 16–May 26, 2002
Exhibits work from the late career of the German architect Ludwig Mies van der Rohe, after he arrived in America in 1938. The Seagram Building in New York and the Farnsworth House in Illinois are among the show's highlights. At the Chicago Museum of Contemporary Art. Contact 312/280-2660 for more information.

Architecture Flirts With Art: UN Studio/Matrix 146
Hartford
February 16–April 28, 2002
One of the first museum exhibitions devoted to the innovative architectural designs of Amsterdam-based firm UN Studio. The show's blend of digital and physical representation will feature some of the firms most notable work, including the Erasmus Bridge and Mobius House, in a fashion that mirrors the firm's imaginative approach to digital technology and architectural design. At the Wadsworth Atheneum Museum of Art. Contact 860/278-2670 for more information.

US Design, 1975–2000
Denver
February 23–May 26, 2002
Through a choice selection of drawings and designs, this exhibition celebrates the work of American designers in the last quarter of the 20th century. Included in the showcase are such designers as Robert Venturi, Maya Lin, and Steven Holl, extending to architecture, industrial design, and beyond. At the Denver Art Museum. Contact 720/865-5000 for more information.

Ongoing Exhibitions

A New World Trade Center: Design Proposals
New York City
January 16–February 16, 2002
An exhibition featuring sketches, renderings, and multimedia projects created by established and emerging architects in response to the need to rebuild on the site of the World Trade Center and embrace the future of New York. At the Max Protetch Gallery. For information, call 212/633-6999 or e-mail info@maxprotetch.com.

Isamu Noguchi: Sculptural Design
Weil am Rhein, Germany
Through April 21, 2002
Bridging the gap between fine and applied arts, this exhibition features the astounding artistic versatility of sculptor Isamu Noguchi, whose work extends well into the fields of architecture and design. On view are more than 80 projects—sculptural works, furniture, stage sets, and public designs. At the Vitra Design Museum. Contact 011 49 7621 702 3351 for more information.

Cesar Pelli: Connections
Washington, D.C.
Through April 28, 2002
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the life and work of distinguished architect and AIA Gold Medalist Cesar Pelli. Through photographs, photo murals, more than 100 drawings, and 30 original models, the show will explore over a half century of his career, culminating with his most recent work. At the National Building Museum. For more information, contact 202/272-2448 or www.nbm.org.

Mathematica
San Francisco
Through May 5, 2002
This Eames-designed exhibition from 1961 showcases mathematics as both a science and a tool for art. Forty years later, it remains the only Eames exhibition still in existence. Other Eames designs on display include toys, home electronics, and lesser-known furniture. At the Exploratorium. Contact 415/563-7337 or visit www.exploratorium.edu.

Lectures, Symposia & Conferences

Business Week/Architectural Record Awards Conference
New York City
February 21, 2002
The Fifth annual Business Week/Architectural Record Awards Conference and awards presentation honors buildings based on their architectural excellence and the degree to which they advance the owners' goals. Information on the winners appeared in the October issue of ARCHITECTURAL RECORD and the November 5 issue of *Business Week*. At the Rainbow Room. Contact amy_katz@mcgraw-hill.com or call the registration office at 800/371-3238.

"Velocity" Design Conference
Richmond
March 22–23, 2002
The Virginia Society of the AIA presents its fifth biennial Virginia Design Forum. Speakers include Neil Denari, director of SCI-Arc, Tod Williams, Ben van Berkel, William Morrish, and Adam Yarinsky. Register online at the Virginia AIA Web site, www.aiava.org. For more information, contact 804/644-3041.

International Quingue Symposium
Newport, R.I.
June 27–30, 2002
This four-day symposium brings together architects, artisans, and scholars to examine key issues in historic preservation practices and will feature the ongoing work of local preservationists and institutions. At Salve Regina University. Contact 401/341-2156 for more information.

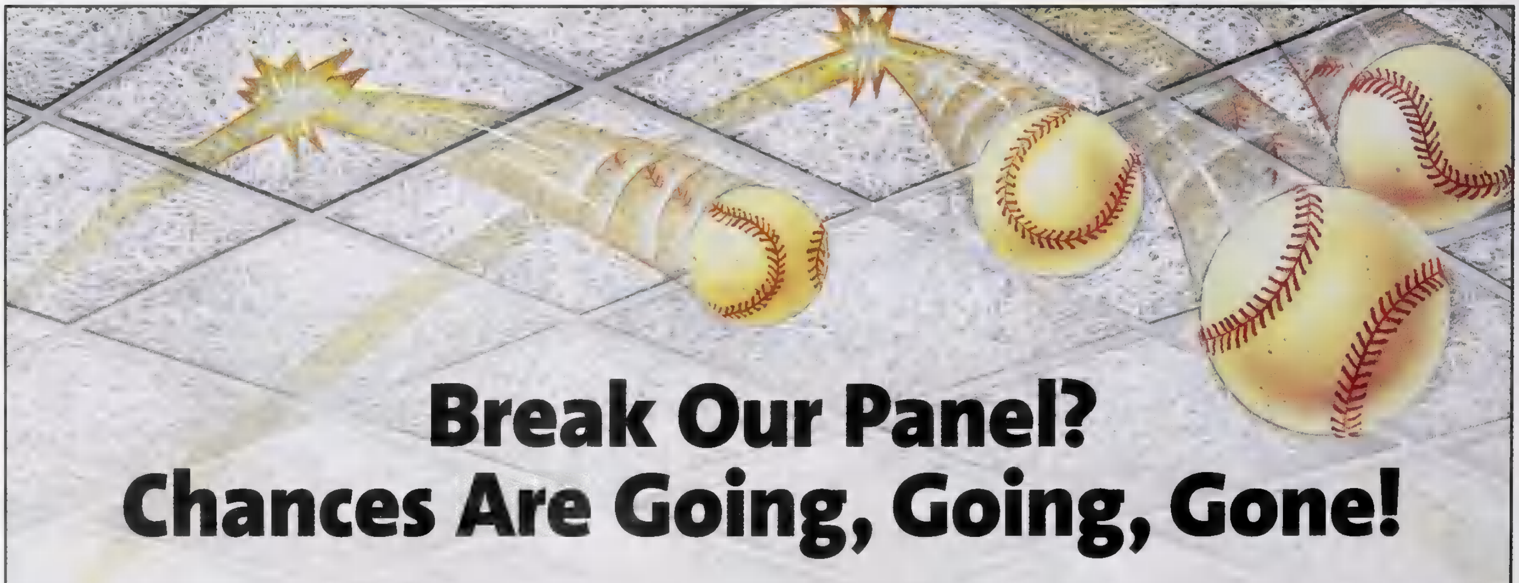
Bricks and Clicks: Challenges in the Digital Age—Annual NASCUP Conference
March 13–15, 2002
Sponsored by the Society of College and University Planning, more than 250 campus administrators, planners, and architects are invited to discuss the relationship between teaching, education facilities, and technology. At Columbia University's Lerner Student Center. Visit www.ccsu.edu/planning/nascup for more information.

Conventions

Restoration & Renovation 2002
Boston
March 21–23, 2002
Now in its ninth year, this conference and trade show gathers exhibitors, speakers, and experts from around the world to address contemporary issues in restoration and renovation of period buildings, interiors, and streetscapes. At the Hynes Convention Center. For more information, contact 800/982-6247 or visit www.restorationandrenovation.com.

Competitions

Material Process: 2001–2002 Young Architects Forum
Deadline: February 20, 2002



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Dates & Events

The Architectural League of New York is sponsoring this competition, open to architects and designers 10 years or less out of undergraduate or graduate school. Winners receive a $1,000 cash prize, exhibit their work, and present lectures at the League in New York City during May and June. For more information and to get an entry form, call 212/753-1722 or visit www.archleague.org.

RIBA Competition

Deadline: February 28, 2002

Invited to explore the possibilities of environmental construction, the Government Energy Efficiency Best Practice Programme sponsored by the Royal Institute of British Architects has launched its fourth open ideas competition to promote sustainable architecture. Open internationally to students and architects, first prize is £10,000. Contact 01 13 234 1335.

2002 AIA Architectural Photography Competition

Deadline: March 1, 2002

AIA St. Louis presents the competition, which is open to all architects registered in the U.S., as well as associate members of the AIA and student members of AIAS. The top 14 entries will be exhibited at the 2002 AIA National Convention in Charlotte, N.C. Cash prizes will be awarded. For more information, call 314/231-4252 or e-mail bookstore@aia-stlouis.org.

Grants Available: New York State Council on the Arts

Deadline: March 1, 2002

The Architecture, Planning, and Design program is offering project grants for architects, designers, and scholars through its Independent Project Category. Up to $10,000 are available for specific projects that advance the discipline and better educate the public on its role within society. Visit www.nysca.org for more information.

Ceramic Tiles of Italy Design Competition

Deadline: March 15, 2002

North American architects and interior designers are invited to submit commercial and residential projects that exhibit an inventive use of Italian ceramic tile and design. Sponsored by Assopiastrelle, the Association of Italian Ceramic Tile Manufacturers, and the Italian Trade Commission. Contact 718/783-3160 for more information.

Orphaned Spaces in the Public Realm: Young Designers' Ideas Presentation

Deadline: April 6, 2002

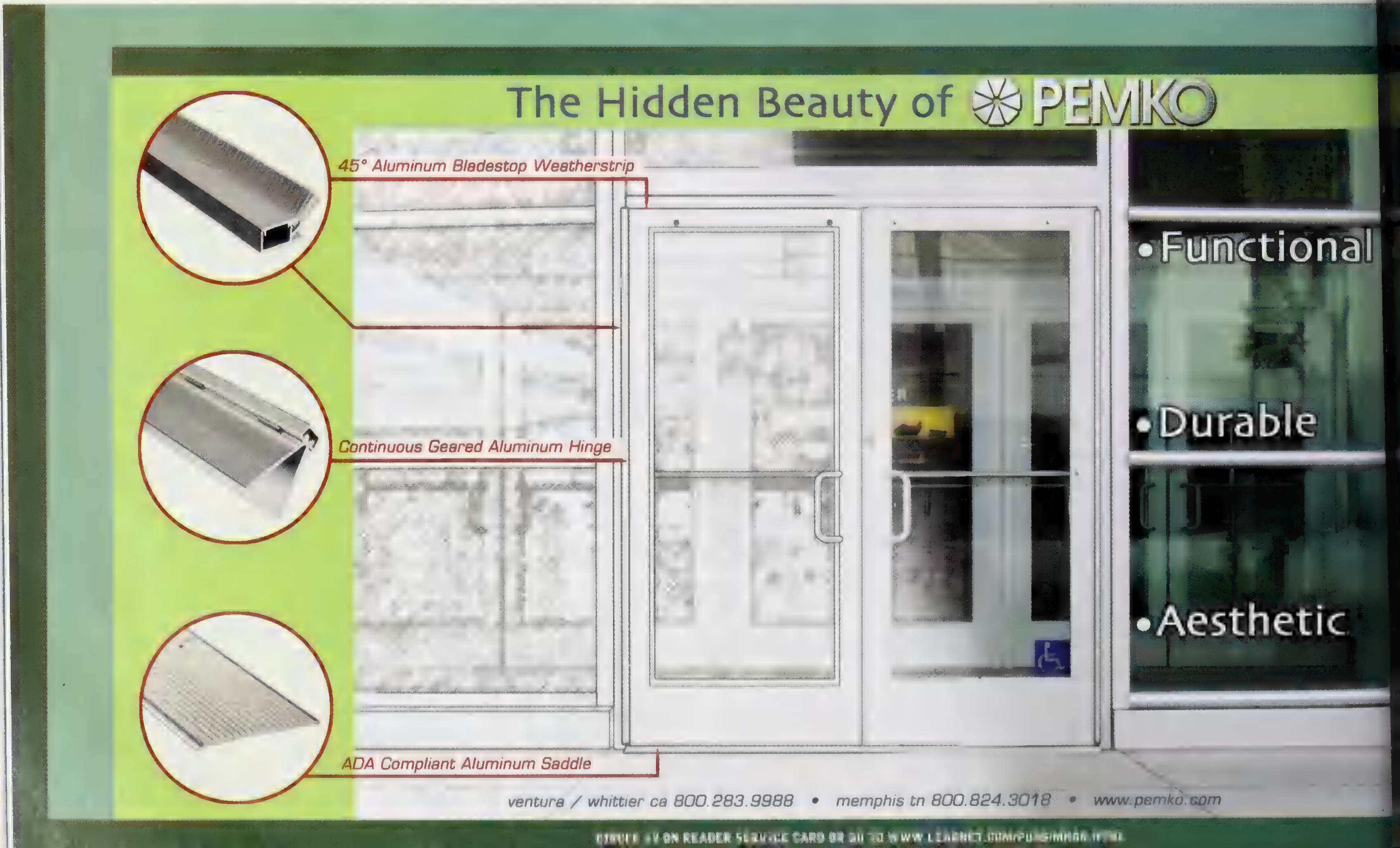
Young architects, designers, and artists are invited to revive Pittsburgh's forgotten neighborhoods and artifacts in a competition sponsored by the Pittsburgh History & Landmarks Foundation. $10,000 has been designated as the award fund and will be distributed among the winners when selected. For more information, visit www.phlf.org.

Bus Shelter Competition 2002

Deadline: April 19, 2002

The Bloomington Community Arts Commission, in conjunction with Bloomington Transit, invites proposals for three new public bus shelters to be installed along a major thoroughfare that will be improved as part of a citywide transportation project in 2002. For information, contact BloomingtonArt@aol.com or call 812/336-0564.

E-mail events and competitions to ingrid_whitehead@mcgraw-hill.com two months before the event is scheduled to occur.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archrecord2

FOR THE EMERGING ARCHITECT

It's no secret that the pages of this magazine are only a pied-à-terre for **archrecord2**. Our real home is on the Web, where you can see the full extent of our four sections, **Design**, **Work**, **Live**, and **Talk**. If you only know **archrecord2** from the magazine, you hardly know it at all.

DESIGN

diVISION ONE: Their own best client

Ali R. Honarkar, Assoc. AIA, and Mustafa Ali Nouri, Assoc. AIA, met in graduate school at the University of Maryland and decided to start a firm (where they have since been joined by Craig Williams). Honarkar and Nouri were inspired by a Wolf Prix lecture, in which he said his firm, Coop Himmelb(l)au, thought of itself more as a rock band than as an architectural firm. And, like rock stars, Honarkar, Nouri, and Williams answer only to themselves. Even their firm's name, diVISION ONE, came from rock 'n' roll, specifically the U2 song "One."

"We started out as two people with the same vision," Honarkar said.

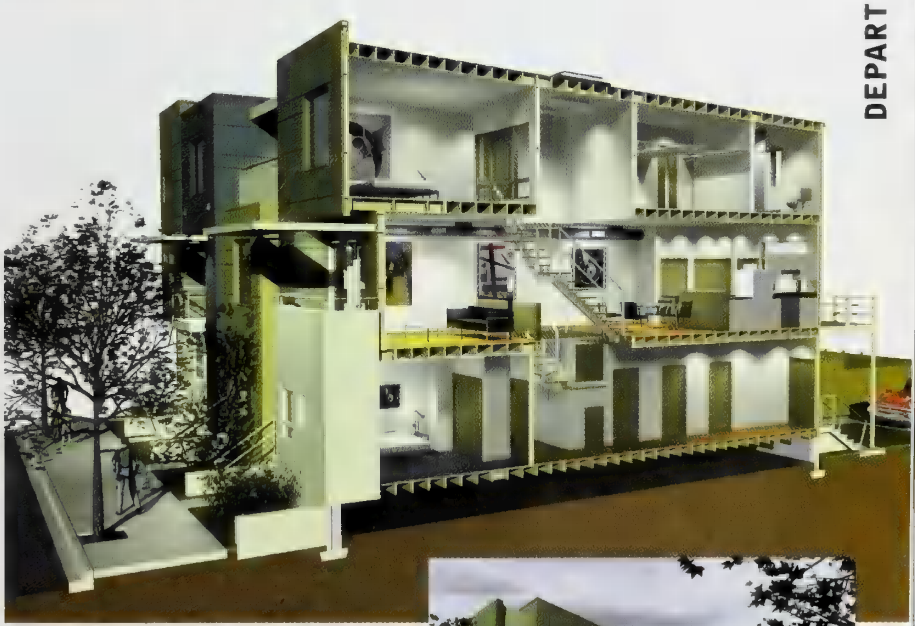
Incorporated in 1994, the firm got busy almost immediately. The original pair began by doing little projects like busboy stands for restaurants. But, like so many young firms, they found that small work can breed big work. Soon enough, busboy stands became restaurants.

Their big break came when they did a renovation for a big photo studio for almost nothing. That project became worth its while when Maryland's governor, Parris Glendening, held a press conference in the building to announce that the project was proof that urban revitalization was working. The firm pushed forward with its modern design, getting projects built in Washington, D.C., that stood out from the traditional architecture of the capital. The partners have always stood by their nontraditional design.

"There are a lot of firms in the D.C. area who do contemporary stuff," said Honarkar, "but that's only a small part of their practice. That's all we do."

Nowhere is this contrast more visible than in the Logan Heights development, in a burgeoning neighborhood near fashionable Dupont Circle. The partners shopped their design for an updated Washington row house around, but couldn't find anyone to back the project. So, they decided to serve as their own developers and contractors. The houses, one of which Honarkar will live in, are nearing completion and have earned the firm the one thing that formerly set them apart from real rock stars: the adulation of the press. *Kevin Lerner*

On the Web, archrecord2 presents a look at how emerging architects spend their time (assuming they have any) outside of the office. Features like "On the Side" and "Architectourist" can be found with our forum and career stories at **architecturalrecord.com/archrecord2**.



Logan Heights row houses, Washington, D.C., 2002
diVISION ONE. The firm served as architect, developer, contractor, and, in one case, will also serve as resident for this modern take on the Washington, D.C., row house. diVISION ONE is also developing a site across the street.

Debi Fox Photography Studio, Washington, D.C., 2000
diVISION ONE. Built for the wife of one of the principals, this studio features a staircase that can double as a step stool, as well as blackout panels for the windows.

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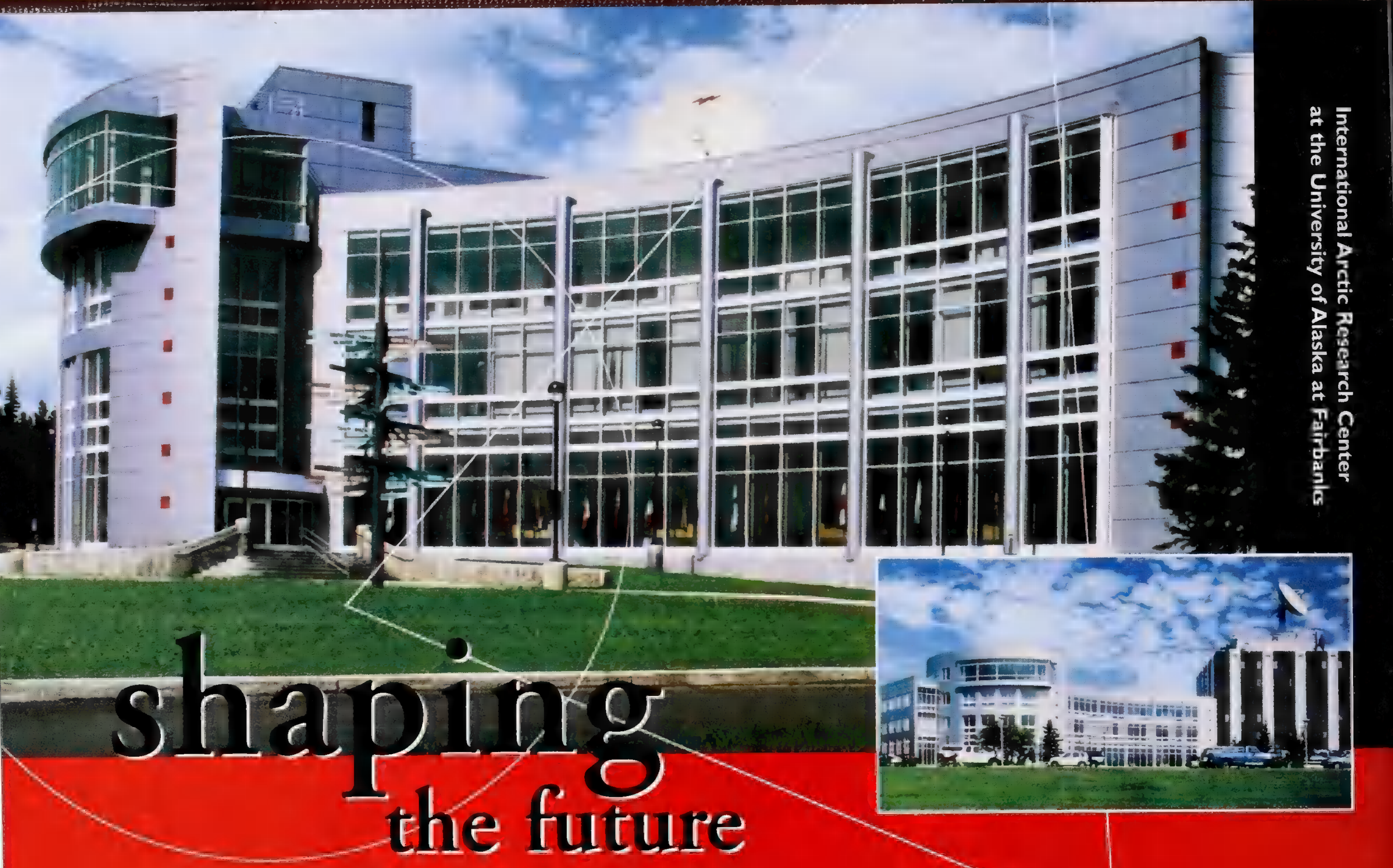
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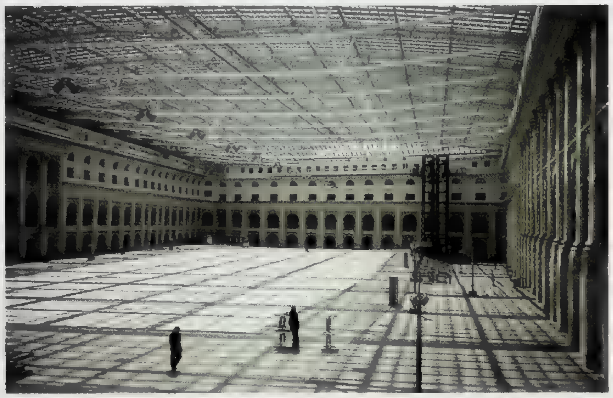
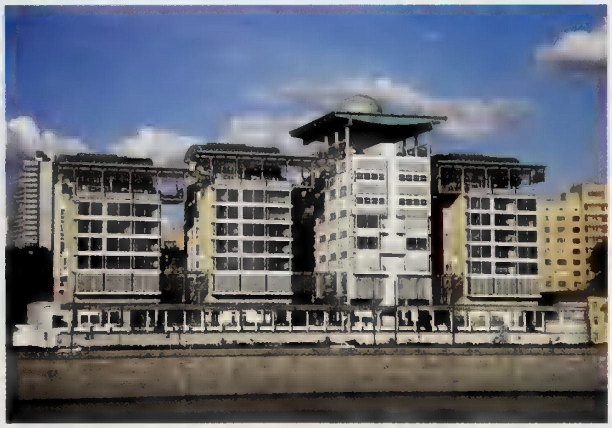
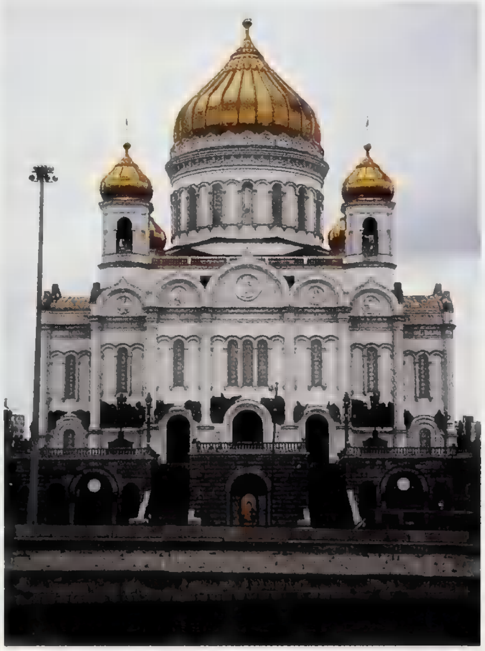
Moscow builds with a mix of old and new, Russian and Western influence

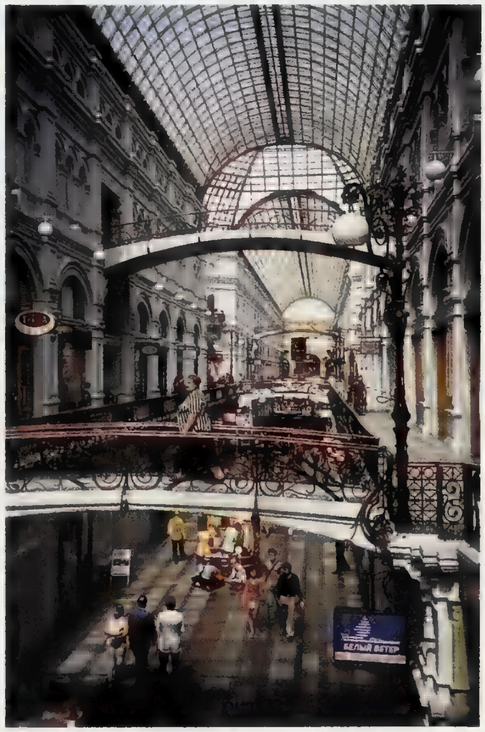
Correspondent's File

By John E. Czarnecki, Assoc. AIA









With the social upheaval of the early 1990s that led to the end of the Soviet Union, along with the subsequent 1998 collapse of the Russian economy, Moscow has changed dramatically. Muscovites, especially the younger generation, are increasingly rejecting the remnants of Communism and accepting more Western, commercial, and capitalist influences. Although change may be slow, the impact is apparent.

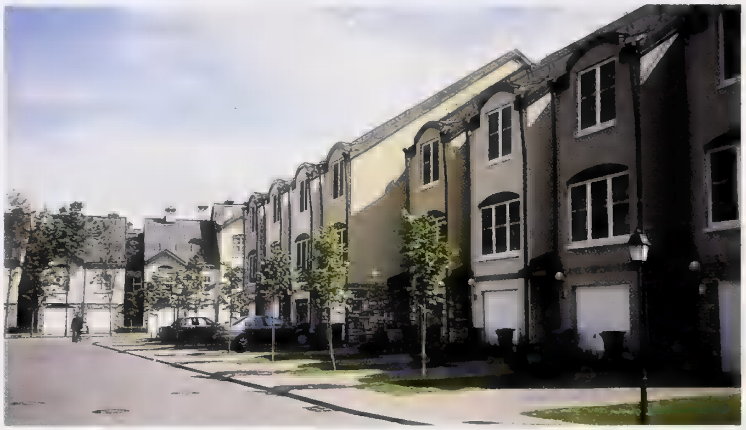
Nowhere in Moscow is the Western influence more visible than in GUM (pronounced "goom"), the well-known shopping arcade in Moscow (bottom right). During the Soviet era, the ornate arcade sharply contrasted with the empty shelves in the shops. Built in 1890–93 on the eastern edge of Red Square, the old arcade, with its dramatic arched glass roof, now includes hip shops like Christian Dior, Benetton, Clinique, Levi's, and Nike. The Russian Revival–style GUM building has been well-maintained and recently spruced up thanks to increased revenue.

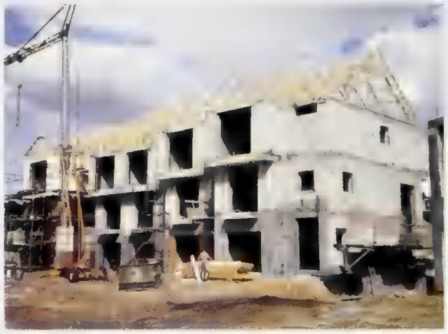
Propelled by new money in a number of sectors, as well as a pro-development mayor, Moscow celebrated its 850th birthday in 1997. A wide variety of building projects recently completed in the city underscore its desire to compete as a world capital. The construction boom is noteworthy for its breadth and diversity of styles and types, not necessarily for architectural beauty.

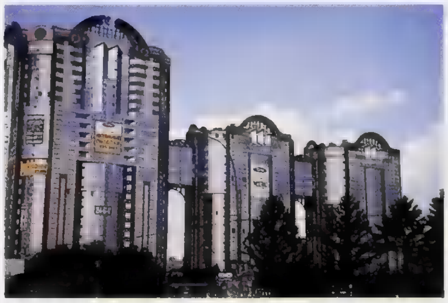
One of 15 major projects undertaken to celebrate the 850th birthday of Moscow was the renovation of Gostiny Dvor (top left), a block-long landmark arcade market designed by Italian architect Giacomo Quarenghi and built in 1791–1805. Located one block east of Red Square, the Gostiny Dvor complex, owned by the Moscow city government, includes small retail shops and a hotel around a central atrium. As part of the renovation completed in 2000, a glass-and-steel dome structure spanning 6.2 acres over the building's central atrium was reconstructed, and sophisticated elements were added to the 200-year-old building, including an automatic climate-control system. The central atrium is used

Moscow buildings of note include (clockwise from top left) the landmark Gostiny Dvor market renovation with a new glass-and-steel roof; the $200 million reconstructed Christ the Savior Cathedral; GUM shopping arcade, with a number of upscale shops and boutiques; and the new British Embassy by British firm Ahrends Burton and Koralek.

PHOTOGRAPHY: © JOHN E. CZARNECKI (ALL)







Pokrovsky Hills (above and left) is a new housing development by Hines for American and Western diplomats and businesspeople. Gaudy high-rise housing (bottom) is sprouting up on the outskirts of Moscow for Russia's new rich.

for special events, such as the world judo tournament held there last fall.

The largest and perhaps most curious of the recently completed buildings in Moscow is the rebuilt Christ the Savior Cathedral (previous page, top right) on the Moscow River. Completed in September 1997 to coincide with Moscow's birthday, the structure is an almost exact replica of the original church that was built on the site in 1839–83 and demolished by Stalin in 1931. His plans for the site called for a proposed Palace of the Soviets, which would have been the world's tallest building, topped by a 300-foot statue of Lenin. The skyscraper was never built, and the site became home to the world's largest public swimming pool until the 1990s. The $200 million reconstruction of the church was the most ambitious of the projects undertaken by Moscow mayor Yuri Luzhkov, and it was especially controversial in terms of cost and architectural style as Russia struggles to reinvent itself. Funded by donations and the state government, the church is 338 feet tall at the top of the central dome, and the 100,000-square-foot interior can accommodate 10,000 worshipers.

In stark contrast to the Christ the Savior Cathedral, farther west along the Moscow River is the modern British Embassy (previous page, lower left) by British architectural firm Ahrends Burton and Koralek, with Arup as structural engineers. Both the British Embassy and the new U.S. Embassy Chancery (this issue, page 88), less than a mile away, opened in May 2000. Regarded by some Moscow architects as "too British" or "too tech," the British Embassy strikingly departs from the Stalinist-era apartment blocks surrounding it. Composed of four copper-roofed buildings linked by wood-screened terraces, the $115 million embassy includes 31 residential units.

New housing

A number of new residential high-rises have sprung up on the outskirts of Moscow (bottom left), and they aren't necessarily pretty. Designed and built by Russians, the towers, to Western standards, appear gaudy and awkwardly proportioned. To the Russians with new money who are moving into the towers, however, these mirror-windowed buildings represent prestige and a step up from the city's mundane apartment blocks.

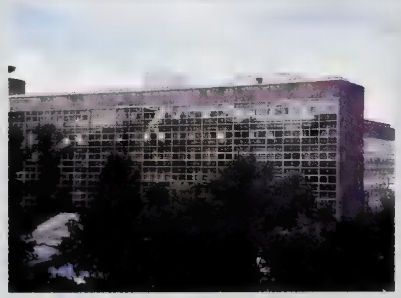
The quality of Russian architects' design work is improving, if slowly, according to Mikhail Mandrigin, an architect who practices in Moscow and London. "What has really changed in the past 10 years is the Russian architect's ability to travel abroad and see other work," Mandrigin says. "Also, a number of foreign architects set up offices here and have done projects here, and they have made a certain impact, as well."

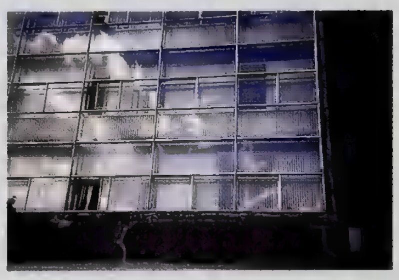
A distinctly American residential development, Pokrovsky Hills (middle and top left), is being completed in phases on the northwestern edge of Moscow. Developed, owned, and managed by American developer Hines, this gated community of 206 town homes is built for American and Western European diplomats and businesspeople. The U.S. Embassy leases more than 60 units for top-ranking diplomats and diplomats with families. The development was designed by Dallas firm Kaufmann Meeks with Dublin's Murray O'Laoire, and engineering by Arup. With curving streets and garages facing the street at ground level, Pokrovsky Hills looks like an American suburb. In fact, Muscovites have nicknamed it "Little America."

Air of optimism

The 1998 economic collapse was a scare for Russia. However, Alan Hart, who manages Arup's Moscow office, says, "things are stirring again in the construction sector. There is an air of optimism." ■

Le Corbusier's Centrosoyus Shows Wear





Le Corbusier's only completed building in Russia, Centrosoyus (Central Union of Consumer Cooperatives), appears to be in a state of disrepair on the exterior. The French architect won a 1928 competition to design the building, one of his first large structures, but he did not supervise the construction. Completed in 1935, this Moscow office building for 2,500 workers is composed of three office slabs raised on pilotis, with an auditorium and worker's club. Its exterior walls were constructed as experimental biomechanical skins, with cavities for forced air circulation. With poor upkeep, portions of the tufa stone veneer have broken off the building, still an office today. ***JEC***

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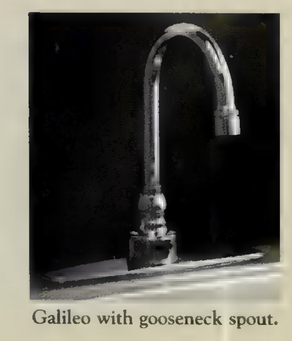
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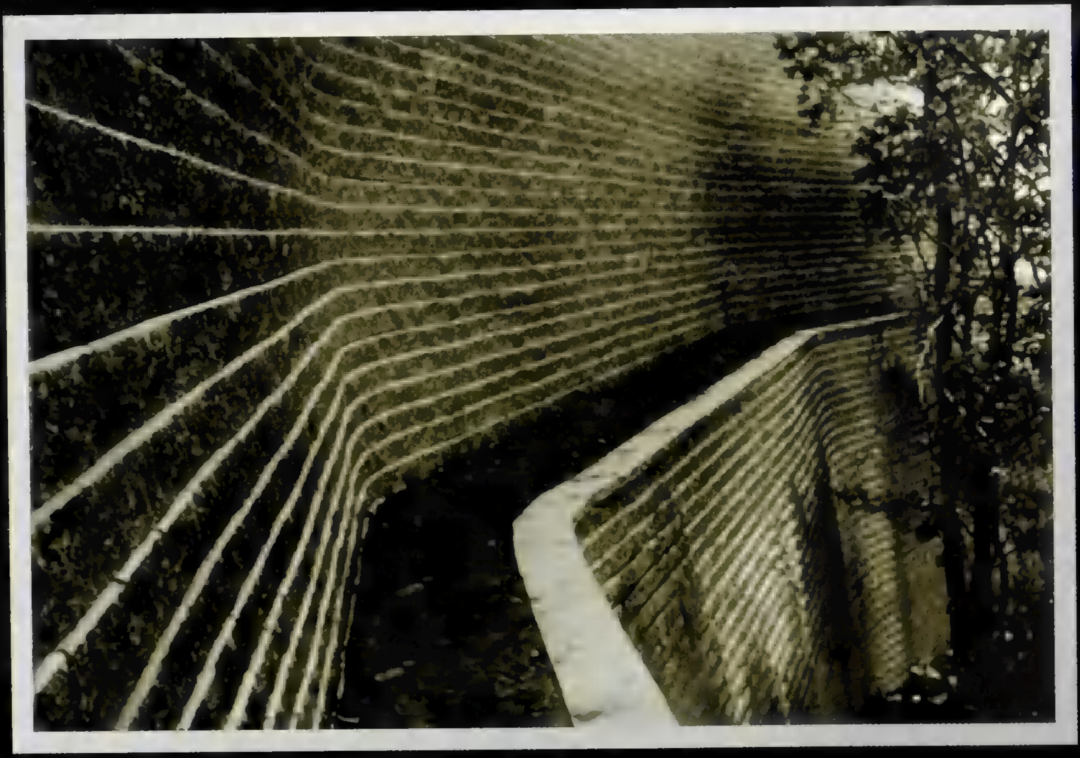

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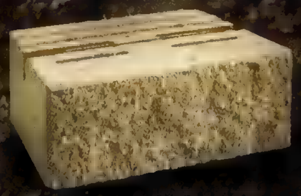

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Ready for the first Postmodern revival? Maybe a little nostalgia isn't so bad

Critique

By Robert Campbell, FAIA

I'm writing on January 1 of the New Year, wondering how architecture will change after the events of 9/11. After an act of architectural deconstruction of this magnitude, it's hard to believe that playacting deconstruction, as performed by fashionable architects, will seem to matter any more. In a time of conformity, creative people look for ways to challenge the system and shove it off balance. But in a time of fear and disorder, like the one we now perhaps have entered, they sometimes seek more reassuring values.

A straw in the wind may be two major exhibitions of 2001, both dealing with architects some had relegated to the past. I missed the one in Philadelphia on Venturi Scott Brown, but I caught the one at Yale on Charles Moore and found it fascinating. Neither architect chose to be called a Postmodernist. But in common parlance that's what they are, if you define Postmodernism as the attempt to engage the sympathy of a wider public by alluding to the familiar architecture of tradition. Is it possible we are on the cusp of the first Postmodern revival? In most schools of architecture, and among the avant-garde, Postmodernism has been despised for a decade now. It was supplanted by another revivalist movement that is best called neo-Modernism. Neo-Modernists dismiss Postmodernists as nostalgia freaks. But as Charles Moore once asked, what, exactly, is wrong with nostalgia? And isn't neo-Modernism nostalgic, too?

Moore wrote much that is worth reading, most of it collected in a new book, *You Have to Pay for the Public Life* (MIT Press). To leaf through it is to wonder whether there weren't values in Postmodernism that are worth hanging on to. Maybe we don't have to abandon everything about a movement when we get bored and move on to the next one.

A trio of virtues

So what's worth saving, if anything, about Postmodernism? I suggest there were three significant virtues.

Virtue One: It recognized that architecture is a conventional language that people read, and that they either understand or don't. Moore, always quotable, was not a fan of minimalist Modernism. He compared it to Esperanto, an invented language that lacks cultural and historic resonance, and also lacks the kind of redundancy that makes poetry possible. Any language is an assemblage of arbitrary conventions. There is no reason why a particular word means what it does; we simply accept it as a convention. "White" could just as well mean "black." Architectural language, too, is an assemblage of understood and agreed-upon conventions, and the wise architect will understand that fact and work with it. That doesn't mean you have to be conventional. You may innovate at the cutting edge of a tradition, or you may choose to make a broad gesture in defiance of it. In either case, you're being creative. But creativity in the absence of conventions is a meaningless concept. A gesture in a void, against no background of conventional expectation, is not a meaningful gesture—and we're seeing a lot of that.

Virtue Two: Respect for context. There are two philosophies at large in the world today. One says, hey, it's a global culture, let's surf with it. It doesn't matter where buildings are sited, because we live in a nexus of electronic imagery, not in physical space. The other view, which one associates today with Rafael Moneo ("Without a site, without a singular, unique site, architecture doesn't exist"), but which is also Charles Moore's, is that making memorable places—places distinct from one another, places responsive to climate and memory and local myth—is the chief task of an architect. I'm with Moore. Architects should be digging in their heels against the worldwide trend to sameness.

Virtue Three: Inclusiveness. Moore liked architects he called includers—"the includers who, like some playwrights, make their order with as much of life as they can include, rather than as little." Gregarious architecture, you might call it. He loved some kinds of architecture nobody else at the time appreciated: the freakish motels of southern California, the pseudo-Spanish of Santa Barbara, even the freeways, even Disneyland. Moore hated any form of cultural totalitarianism, any effort by self-appointed taste police to dictate what the world should look like. Cultural totalitarians are everywhere today, in architecture as well as in Afghanistan. But the truth is you can do any kind of architecture either well or badly, regardless of whether it's neo-Georgian or neo-Modern.

Moore designed parts of Sea Ranch in the mid-1960s with MLTW Associates.

PHOTOGRAPHY: © RICHARD SEXTON

Contributing editor Robert Campbell, FAIA, is the Pulitzer-Prize-winning architecture critic of The Boston Globe.

I'm not arguing for a return to the Postmodernism of the 1970s, when students raced to the Xerox machine to copy someone like Giulio Romano onto their facades. That was as silly as today's rush to the computer to dabble in its momentarily amusing geometries. Much of Postmodern architecture was sloppily built, more a stage set than a durable construction. Nor am I a fan of the neo-Postmodern design in places like Celebration, where the Hallmark card architecture of the houses is banal. (As the poet Corneille said, to win without risk is to triumph without glory.) There's a spectrum in any art that runs from banal at one end to unintelligible at the other. If you merely satisfy conventional expectations, you're banal. But if you ignore the conventional language entirely, you become unintelligible. The good stuff falls somewhere in between, itchy to be inventive while remaining in touch with a tradition. I'm also no fan of the "double-coding" proposed by Charles Jencks, in which sophisticates (like you and me) were supposed to chuckle at populist architecture with an ironic wink. That was snobbery.

Kresge College at U.C. Santa Cruz shows Moore's ability to create memorable places.

So let's remember what was good and throw out what was bad about Postmodernism. If I sound conservative, let me end with a quote from an unimpeachable source. Kenneth Frampton once wrote in the *Harvard Design Magazine*: "We live in an age in which speed and cybernetic disposability are advanced as the order of the day. But it must be seriously questioned whether speed and ephemerality ever had anything to do with architecture, and further, whether architecture is not, to the contrary, an essentially anachronistic form of art, whose fundamental task is to stand against the fungibility of things and the mortality of the species."

Or, as W. Van Quine, esteemed Harvard philosopher, put it: "We cannot stem linguistic change, but we can drag our feet."

A footnote: I write this critique bimonthly. The one that appeared in December dealt with the World Trade Center disaster. I compared the WTC to the previous worst catastrophe in New York, the fire aboard the excursion steamer General Slocum on the East River, which claimed at least 1,100 lives, mostly children. I was arguing, in relation to monuments, that what survives longest is not stone but words. I am grateful to Erica Stoller for making the point better than I did, by noticing that the Slocum is mentioned in James Joyce's novel *Ulysses*. The fire occurred on June 15, 1904; the action in *Ulysses* takes place on June 16 ("Bloomsday" to Joyce fans). The passage reads:

"He passed Grogan's the Tobacconist against which newsboards leaned and told of a dreadful catastrophe in New York. In America those things were continually happening. Unfortunate people, to die like that, unprepared. Still, an act of perfect contrition." ■

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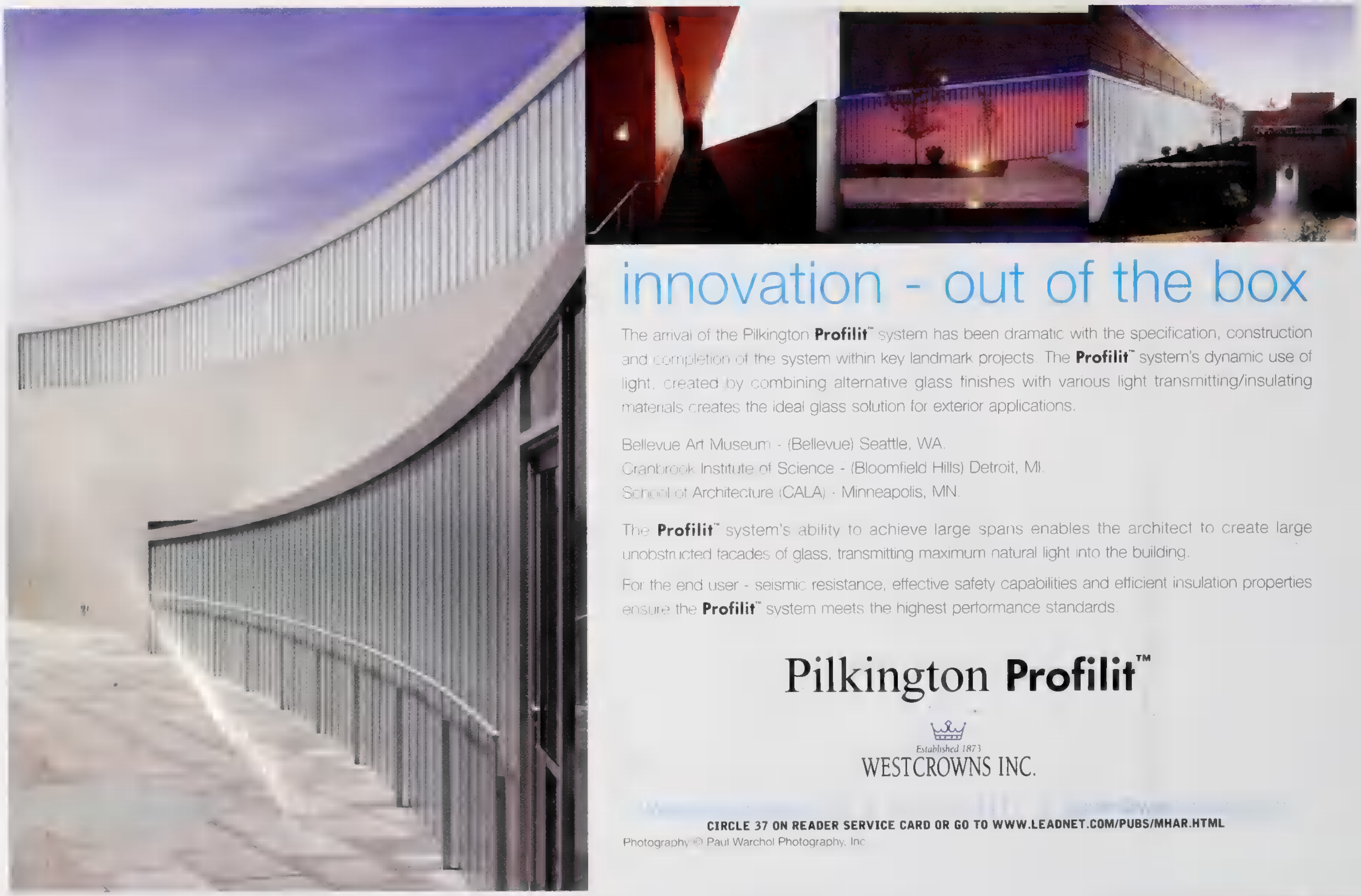
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The ever-elusive Le Corbusier—even today writers can't quite figure him out

Books

By William J.R. Curtis

Le Corbusier, *by Kenneth Frampton. New York: Thames and Hudson, 2001, 240 pages, $15 (paper).*

Le Corbusier and the Continual Revolution in Architecture, *by Charles Jencks. New York: The Monacelli Press, 2000, 384 pages, $50.*

It is now 36 years since Le Corbusier died in the Mediterranean at Cap Martin, and there is scarcely a major architect alive who has not been touched by his example. There has been an ever-growing volume of writing about all aspects of his work. But despite the vast number of specialist monographs and catalogs, the books attempting anything like an overview of the architect have been few. Le Corbusier is a challenging and elusive subject. There is no place for facile explanations when dealing with work of the depth and complexity of his. The writer needs to combine broad knowledge, deep insight, and literary skill. Past discoveries and new interpretations have to be integrated into a framework that avoids just reinforcing the author's own obsessions, and it is crucial that the contributions of predecessors be acknowledged correctly. Ideally, one hopes to reassess the artist's position in the long-term perspective of the history of ideas and forms.

Every historian is bound to project prejudices and preoccupations. Kenneth Frampton has long considered Le Corbusier a fundamental reference point in the search for a critical modernism, and some of Frampton's most insightful writings have been about the ideological and political contradictions of the architect's social project. One is not surprised, then, by the slant of his book *Le Corbusier*, which is partly revealed in the introduction: "Emphasis has been placed as much upon the interplay between ideological influences and conceptual intentions as upon the realization of actual buildings."

This is all right as long as one does eventually get to the buildings themselves in all their individual poetry and richness. Surely one of the reasons why so many people go on writing books about Le Corbusier is because they find his work so moving. This is something beyond style, for it touches the observer at subliminal levels. Le Corbusier's buildings are dense emblems of form and meaning, and they address private as well as social realities. Their unique order cannot be explained simply in terms of preexisting themes, types, or "conceptual intentions." They rely on an oscillation between general and particular, material and ideal.

Frampton's account is extremely compressed, and one guesses that he might have liked more space than that permitted by the Thames and Hudson World of Art Series. The formative years up to the Villa Schwob of 1916 are over in one brief chapter, and Frampton then charts the "heroic period" of the 1920s at several scales, including architecture, furniture, and urbanism. The canonical houses and villas of this period also rush by quickly, with obligatory nods to the analyses of some earlier writers, and with a tendency to treat buildings as examples of concepts and types. One gets no idea what it is like to experience the building, or what effect it may have had on Frampton's own sensibility. The writing is more at ease when dealing with the grand urbanistic themes of the 1930s, such as the Radiant City, or when examining Le Corbusier's "politics of the unpolitical."

Frampton's treatment of the late works—such as the Unité d'Habitation at Marseilles, the Chapel at Ronchamp, or the Capitol at Chandigarh in India—is more vivid and allows a greater chance to reflect upon the interplay between concepts and final forms. On reading some of the passages on the religious works and on the *Poème de l'Angle Droite*, one senses that the author is more alert than hitherto to the spiritual and cosmic dimensions of Le Corbusier's architecture and worldview. One is left with the overall impression that Frampton still considers Le Corbusier to be a basic touchstone for contemporary architectural culture.

By contrast, Charles Jencks, in his book *Le Corbusier and the Continuing Revolution in Architecture*, tries to enlist Le Corbusier in his long-lost cause of "Post-Modernism." In truth, this is not a new book at all but an expanded version of the earlier *Le Corbusier and the Tragic View of Architecture* (first edition, 1973; second edition, 1987). Despite abundant evidence revealing the wide range of philosophical influences upon Le Corbusier, Jencks sticks to his old obsession with Nietzche as the key to the supposed "tragic" aspects of Le Corbusier's personality and architecture. But in this edition the author expands the picture to include "spirituality, women, Post-Modern symbolism, genius and the relevance of cosmic architecture." These, he tells us, are "new to this book and also to Corb Interpretation (now an industry)."

These turn out to be empty claims. Take the issue of "cosmic architecture": Jencks has much to say about the solar symbolism of the Parliament Building in Chandigarh, but he lists very few of the mostly secondary sources upon which he appears to have relied. One looks in vain for proper detailed references to earlier research and interpretations, as the footnotes are sparse indeed, and there is no bibliography whatever (how Monacelli Press allowed this, I cannot imagine). There is, after all, a difference between a deep historical insight based upon the industry of thorough and considered primary research, and scissors and paste journalism that sticks together bits and pieces of largely received knowledge.

In the first edition it was *cherchez le philosophe*; now it is *cherchez la femme*. Jencks includes several women in his psycho-saga, assigning to them particular roles. Josephine Baker (whom Le Corbusier met on board the S.S. *Lutétia* in 1929) becomes "Goddess of Dance"; Marguerite Tjader-Harris (whom Le Corbusier saw frequently during his trip to the U.S. in 1935) becomes "his spiritual guide, his Beatrice in navigating this battlefield"; Minnette De Silva, "an elegant petite beauty from Sri Llanka" in her 20s when they met in the late 1940s, somehow metamorphoses into a mythical anima figure helping Le Corbusier to prepare himself for the task of unraveling the spiritual secrets of Mother India! (As for P.L. Varma, the chief engineer of the Punjab, who supported Le Corbusier through thick and thin, who actually got Chandigarh built, and who became a close friend, sharing his insights into India's spiritual heritage, he is nowhere mentioned at all. Even today Varma is known as "the Soul of Chandigarh.") One of the oddest moments in Jencks's book (and there are several) is when he illustrates a project of 1978 for "re-urbanising" the Capitol of Chandigarh by filling it up with horrendous neo-rationalist blocks, claiming that Le Corbusier might well have done the same thing if he had lived! At a time when developers are only too eager to get their hands on Chandigarh and to break the zoning laws, this cannot be called innocent fun.

But where is poor Madame Le Corbusier all this time, as her errant husband sketches gorgeous women in the nude on board ocean liners or caresses exotic moon goddesses in his imagination? Why, she is back at home, of course, guarding "*le foyer*." And when the "*grand bon homme*" returns, she cooks first-rate meals for him and his notable guests. Poor Yvonne (née Gallis) gets a rough ride for her trouble. On page 193, Jencks makes the extraordinary assertion: "Several French acquaintances have said that she was more than a woman of easy virtue." When I read this I thought I had made a mistake, so I read it again, then turned to the notes to find out who these "French acquaintances" might be—as usual, no reference. But then whoever said that Yvonne was a "woman of easy virtue"!? And what does any of this tell us about her relation to Le Corbusier, about Le Corbusier himself, or about Le Corbusier's architecture?

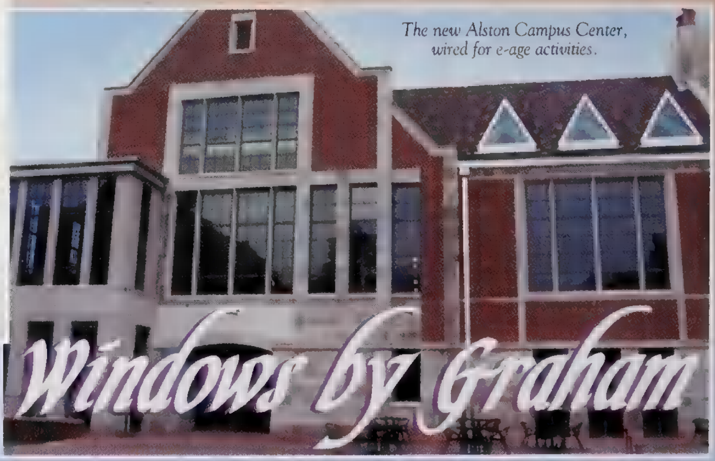
The relationship between an artist's life and the life of forms is never straightforward, and it is naive to imagine that one can link works directly to "personality." Even so, Jencks charges on and makes a totally unconvincing attempt at demonstrating that La Tourette is a "self-portrait." At this point one longs for the rather dry analysis of Kenneth Frampton again, or anything as an antidote to a text that combines intellectual pretension with dubious projections. It is high time that a proper biographer/historian, armed with the tools and insights of the trade, wrote a balanced and accurate biography of Le Corbusier the man. But even if this were done, it would never fully explain his art, just as his art does not explain him.

Classic Campus Enters E-Age with Low-E Windows by Graham

Agnes Scott College chose Graham windows to daylight two buildings, important to the web-based future of the 111-year old private women's college, located near Atlanta. The new Alston Campus Center provides plenty of additional space for campus events, student services and a cybercafe. Newly renovated and expanded McCain Library is a dynamic, technology-enriched building, true to the campus' Gothic architecture.

Graham manufactured 1,100 aluminum 6700 Series fixed casement windows for the two buildings. The unique challenge was to provide high performance low-e windows with narrow lines, including applied muntins that replicated the look of the original steel casement windows.

McCain Library, expanded and renovated in Gothic tradition



The new Alston Campus Center, wired for e-age activities.

Credits: Elsa Pena, Agnes Scott College director of capital improvements. Architects: Perry Dean Rogers & Parners, Boston; Thompson, Ventulett, Stainback & Associates, Atlanta. Window installation: Southern Sash Supply, Montgomery.

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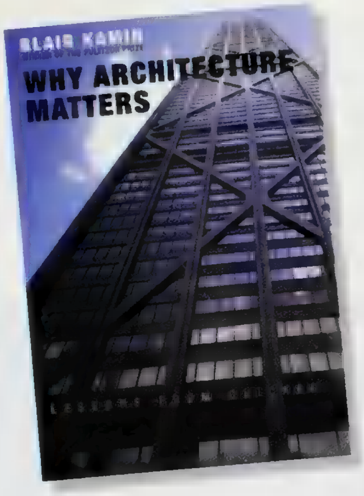
Why Architecture Matters: Lessons from Chicago, *by Blair Kamin. Chicago and London: The University of Chicago Press, 2001, 386 pages, $38.*



There is no one right way to write about architecture. But for my money, Blair Kamin's way has all the best ingredients: passion, courage, a nondoctrinaire intelligence, and carefully crafted prose. Sometimes it sings. Consider his description of Chicago's John Hancock Tower, for example, as "dark, strong, powerful, maybe even a little threatening—like a muscle-bound, Prohibition-era gangster clad in a tuxedo."

The book consists of a selection of columns Kamin wrote for the *Chicago Tribune* during the 1990s, for which he won a Pulitzer Prize for criticism in 1999. In writing about new or proposed building projects, he explains that what makes architecture matter are its social, urban, civic, symbolic, and artistic benefits. This volume is in its way a tribute and guide to Chicago, and, as Kamin says, "architecture is the art that most visibly and viscerally defines Chicago—its tough beauty, its hustler's pragmatism, its quintessentially American optimism."

He identifies himself as an "activist critic," a breed that, instead of waiting for mistakes to be made, he says, "whacks at the offending party with the journalistic equivalent of a two-by-four" and offers better alternatives when possible. He prods politicians, patrons, bureaucrats, and architects to exceed themselves, and his efforts have borne fruit. One of many examples: After Kamin wrote about Goody Clancy & Associates' transformation of Boston's Harbor Point from a high-rise slum to a neighborhood, Chicago hired the architects to prepare a master plan for its Cabrini-Green public housing.

Blair Kamin's writing matters!
Reviewed by Andrea Oppenheimer Dean

Manufactured Sites: Rethinking the Post-Industrial Landscape, *edited by Niall Kirkwood. London, New York: Spon Press, 2001, 272 pages, $75.*

Converting polluted industrial sites to profitable new uses is one of the foremost challenges for American cities. It is also notoriously complex, costly, and riddled with legal barriers, an unintended legacy of over 30 years of environmental legislation. *Manufactured Sites* seeks to dissolve disciplinary boundaries between scientists, engineers, and site designers as they strive to restore long-neglected brownfields.

Assembled from presentations given at a 1998 symposium at Harvard's GSD, the volume offers an excellent overview of the environmental laws that govern site cleanup as well as case studies in landscape restoration, including a description of soil-and-water-management techniques used at the site of the 2000 Olympics in Sydney.

One of the more cogent essays by the University of Minnesota's Rebecca Krinke reminds us that our view of land as a commodity for development is very recent. Many celebrated landscape projects were conceived to protect public health; Olmsted, for instance, designed the Back Bay Fens in Boston for flood control and sewer drainage. Throughout the text, we're reminded that site regeneration isn't a brand-new challenge—it's one that forces us to realize again that land resources are limited, particularly in burgeoning cities.
Reviewed by Deborah Snoonian

Keeping Quiet in School

Sometimes "keeping quiet in school" depends on keeping aircraft noise outside.

East Boston High School, Boston, Mass., crowns the hill above Logan Airport.
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I also wanted to say something about childhood and our fascination with flight. To me, flight represents freedom and rising above our problems and gaining that all so important 'perspective' on life. I feel like I have to take a couple of flights a year just to get off of the earth and regain some of that 'vision'.

— Gary Lee Price

"Journeys of the Imagination"
Bronze, 50" high

"Wings"
Bronze, 18" and 50" high

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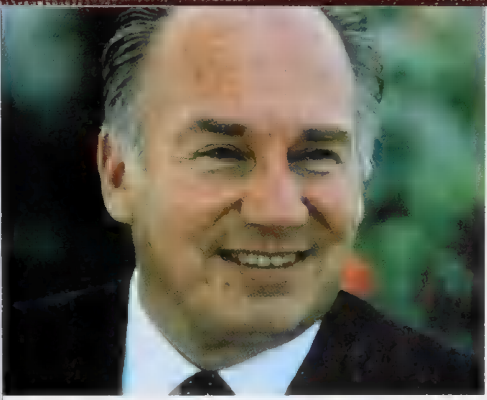


AGA KHAN AWARD FOR ARCHITECTURE 2001

An Interview with the Aga Khan

On the occasion of the 2001 Aga Khan Award for Architecture, Robert Ivy talked with His Highness the Aga Khan about the architectural, social, and environmental issues facing Islam today. The following interview was conducted at Aiglemont, France, on August 31. Due to the events of September 11, the interview has recently been updated.

ROBERT IVY: As Imam of the Ismaili Muslims, you lead a far-flung religious community that is an important branch of Islam. You have personally expressed an affinity for Islamic architecture. We fully appreciate your belief in the traditions and teachings of Islam. But, in light of the events of September 11, we must ask how you view the actions of Islamic radicals toward Western culture and its peoples?

His Highness, the Aga Khan: I should start by saying that I have been exposed to several cultural traditions. As you probably know, I have a degree in Islamic history from Harvard. As I said recently in an interview with *Connaissance des Arts* [interview conducted by Philip Jodidio, *Connaissance des Arts*, January 2002], I think there is a massive gulf in the understanding and knowledge between Muslims and non-Muslims—I mean particularly the West and the Islamic world. What we are talking about in reality is a strong minority of people committed to their own particular interpretation of Islam, who seek to impose it on others. I do not believe that the totality of the Islamic world recognizes the Taliban interpretation of the faith as being representative of its own view. There is no unanimity in Islam with regard to this interpretation. Generally you will see as much diversity in the Islam as you do in the Christian world today. But the West does not really understand the pluralism of the Islamic world.

The Aga Khan Award for Architecture program includes reuse of historic buildings such as the Khan Bathhouse in Yazd, Iran (left). Renovated by Urban Development and Revitalization Corporation, Tehran, it is now a restaurant.

RI: Architecture, which you espouse, can be understood as one of the languages of peace, yet we, the West, are at war.

HH: I also noted in the recent interview that one of the forces of change for all civilizations unfortunately has been war. Conflict situations are driven by concepts of victory, power, and elimination of inherited culture, and not by the underlying values of civilization. There are many interpretations of Islam within the wider Islamic community, but generally we are instructed to leave the world a better place than it was when we came into it. The Aga Khan Award for Architecture seeks to make a better place in physical terms. This means trying to bring values into environments, buildings, and contexts that improve the quality of life for future generations.

RI: The need for global understanding and mutual tolerance has never been more keenly felt. And to those purposes, the awards come into play. You've now been conducting the Aga Khan Architectural Award program, administered by the Aga Khan Trust for Culture, since 1977, through eight triennial cycles. In what ways has the program evolved over time? From your perspective as founder, has it affected the physical environment? How have the issues you addressed either changed or remained constant?

HH: As the award program has continued, we have learned we needed to have an impact on values—ethical and aesthetic value judgments—and we needed to affect cultural value judgments. Therefore we had to influence opinion leaders.

We also had to accept the reality that the industrialized world was dominating the processes of change in the Third World, in particular in the Islamic world. And, that domination resulted in educational processes that were shaped by the First World. So we felt we had to assume more of an educational role. The award program was not intended to be primarily educational, and we didn't want the award program to become a school. This is why we established the Aga Khan Program for Islamic Architecture (AKPIA) at Harvard University and the Massachusetts Institute of Technology.

RI: Yet you have described the award program's role as catalyst for improvement of cities and societies in Islamic areas.

HH: The need for addressing issues such as historic cities in the Islamic world was constantly being put back on the table in one form or another. Yet anything connected with my development interests is automatically disallowed in the award process. I ended up by wondering if there could be a bridge between what I was doing in development and the cultural context of, for example, the historic city. This led to the Trust for Culture to create the Historic Cities Support Program. It is a remarkable bridge between cultural support, and, at the same time, development support for communities that very often are marginalized and underprivileged.

PHOTOGRAPHY: © KAMRAN ADLE (MIDDLE); GARY OTTE (PORTRAIT)

RI: Are the social issues you encounter in these emerging nations changing?

HH: Yes, because civil society is changing. If you go back to the 1950s, you see colonialism and poverty in the Islamic world. You also see the effects of the cold war, and essentially government-driven processes of change, such as centralized economic planning. You see the need to create a sense of nation in a number of countries that were not yet independent.

Today you have decision making by independent governments. Nationhood is now an accepted notion. You have economic change resulting from a process of market forces rather than dogmatic attitudes toward economic change. You have areas of extreme wealth in the Islamic world. You have countries that are emerging from a colonial past. The cold war is over. And you have an awareness—perhaps, to me, one of the most important—that in most parts of our world, the rural community dominates. The numbers of people in rural communities in the Islamic world, plus the difficulty of addressing the problems of development in rural communities, is a central issue. For example, people who build for themselves do not know about seismically sound construction. How do you teach people how to build in a safe manner in the rural environment?

RI: Unlike other award programs in which highly touted architects dominate the shortlists, this program regularly confers honor on lesser-known individuals and communities. What effects have these decisions produced?

HH: You see more and more small rural projects, which are considered highly important to be put together by village organizations or nongovernmental organizations working in rural environments. In the past we were concerned with the architect functioning in the urban environment. As far as the Islamic world is concerned, the award has brought about a major change in that emphasis.

Second, the notion of pluralism is, historically, part of the Islamic world. By premiating different types of projects and environments in various countries with their own distinct architectural traditions and languages, the award has enhanced the notion that pluralism is an asset.

A third area of concern is less easy to define but involves our attitude to high-tech projects typical of those adopted from industrialized nations in the 1950s, '60s, and '70s. But buildings need to become more appropriate to their own environments, to their own building industries, and to their own symbolic values. In addition, the award has not been able to find projects to premiate in categories it considered really important, such as industrial complexes. They are remarkable phenomena of change. In much of the Islamic world, the liberal economy, rather than contextual factors, shapes that sort of change.

RI: Could you describe the contextual question—you mentioned that often, and I assume that you are referring to more than just a stylistic matter.

HH: It's a value system.

RI: Since these awards are intended for Islamic societies, have they identified places and projects that are responsive to specific social, cultural, intellectual, spiritual, or geographic issues? What is authentic or real for building in a specific place?

HH: The award program gives a new sense of value to traditional cultures and forms of expression that show modern materials don't have to be used to achieve desired results.

RI: You include hotels among the premiated buildings.

HH: We have premiated a number of projects in tourism, and there's a downside and an upside. In principle, tourism can be managed if the right questions are asked. Beyond a point, tourists can create a problem. But a lot of ministers of tourism, and a lot of people running hotels or historic areas, don't look at that, nor do they plan for it.

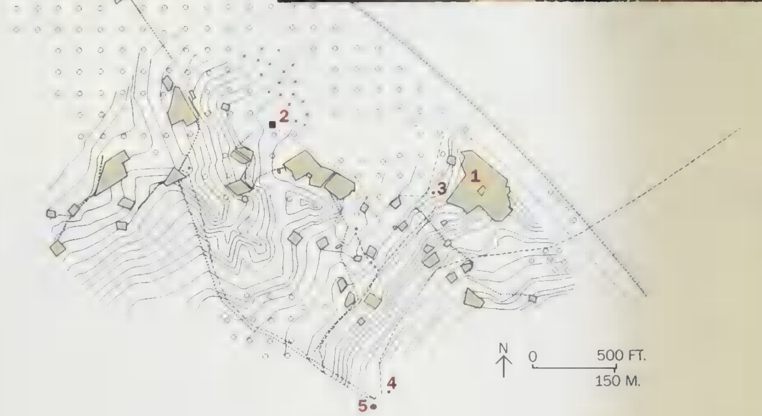
You need to define what sort of tourism you want. Cultural

PHOTOGRAPHY: © G.R. PASBAN HAZRAT (TOP); HANS SCHULIEN (MIDDLE AND BOTTOM)

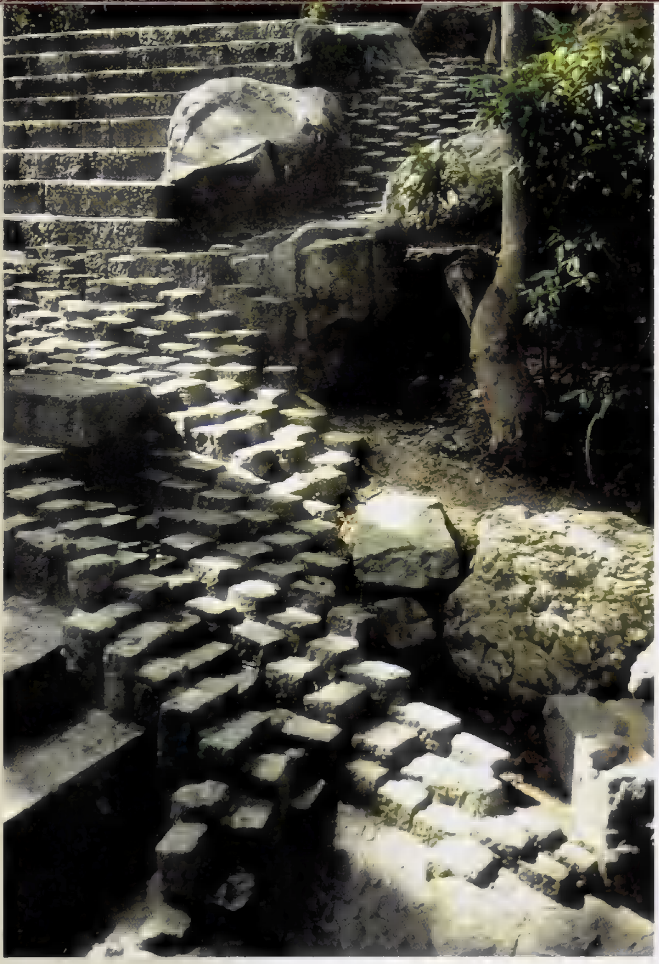
Aït Iktel, Abadou, Morocco

Ali Amahan and Muhamed Amahan, Initiators

A community self-help program provides a Berber settlement with new buildings and basic services.



1. *Training and Information Center*
2. *Water tower*
3. *Fountain*
4. *Library*
5. *Power plant*

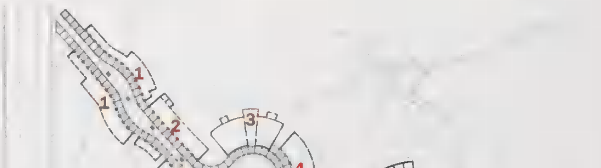


Bagh-e-Ferdowsi, Tehran, Iran
Baft-E-Shahr, Architect

A park in a dense, sprawling city affords places for hiking, family recreation, and cultural facilities. The design emphasizes the changes in topography of the steeply sloping, 74-acre area, and makes use of local materials, water, and a variety of plants.

Olbia Social Center, Antalya, Turkey
Cengiz Bektaş, Architect

The existing facilities of a university campus lacking architectural distinction were linked together with walks shaded by pergolas. Along the two routes weaving through the campus are new facilities for a museum, café, shops, restaurants, clubs, auditoria, and meeting rooms.

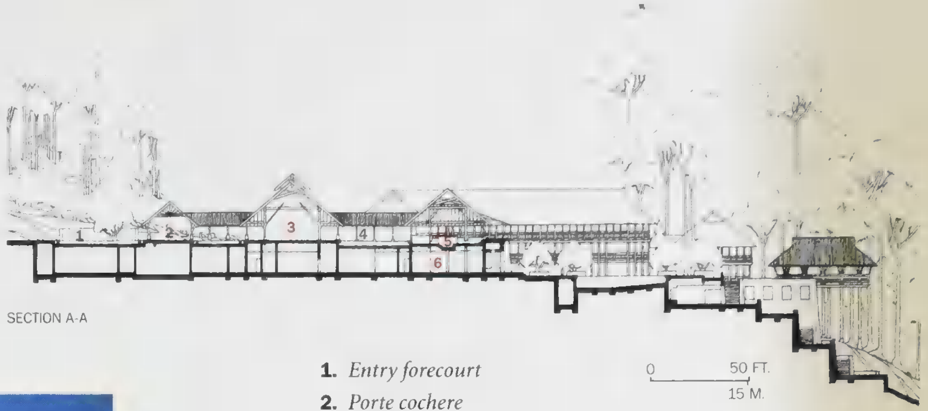


1. *Clubs*
2. *Nature club*
3. *Meeting hall*
4. *Cafeteria*
5. *Theater*
6. *Amphitheater*
7. *Shopping*
8. *Museum*

PHOTOGRAPHY: © FITZHUGH JUSTIN (TOP LEFT); TIM BRADLEY (TOP RIGHT);
CEMAL EMDEN (MIDDLE AND BOTTOM)

Datai Hotel, Pulau Langkawi, Malaysia
Kerry Hill Architects

A luxury hotel on a tourist island has been designed to accommodate 84 rooms and 40 villas in a lush rain forest. Indigenous wood and stone are dramatically used inside and out, along with a sensitive massing, deep overhangs, cross ventilation, and other passive climate-control measures.



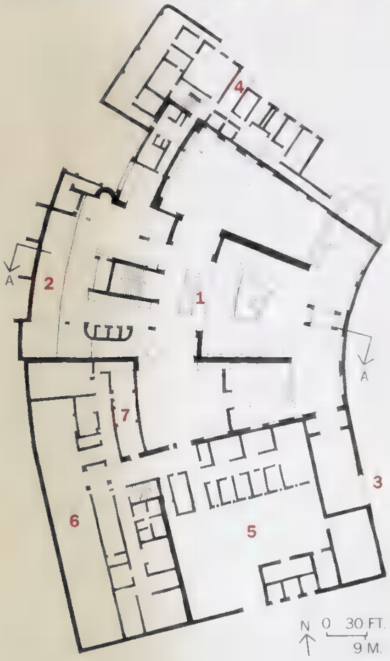
SECTION A-A

1. *Entry forecourt*
2. *Porte cochere*
3. *Lobby and reception*
4. *Water garden*
5. *Lobby lounge*
6. *Dining room*

SOS Children's Village, Aqaba, Jordan
Jafar Tukan & Partners

As part of a program for orphaned children, SOS Villages International created a cluster of houses for 72 children. To avoid an institutional atmosphere, nine children live in each house, in a family-like setting. The houses, designed with local granite, are grouped around a central square and linked by paths, gardens, and pergolas.

PHOTOGRAPHY: © ALBERT LIM (TOP TWO); SAMIR SADI (BOTTOM THREE)

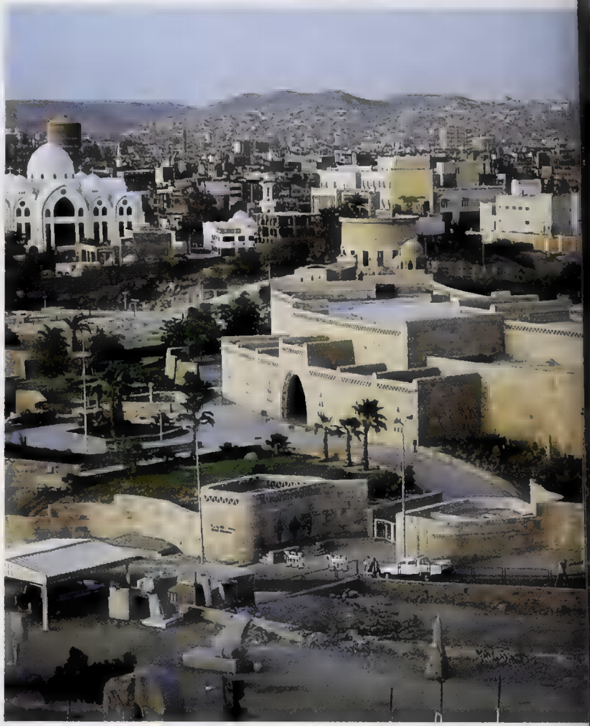


LOWER (MAIN) LEVEL

1. *Exhibition hall*
2. *Diorama*
3. *Exit to outdoors*
4. *School entrance*
4. *Service yard*
6. *Main storage*
7. *Offices*

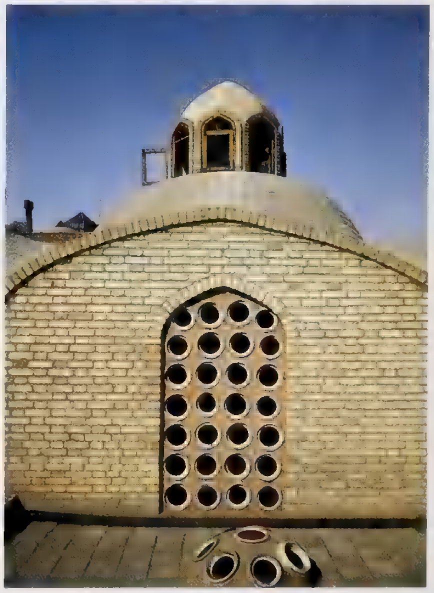
Nubian Museum , Aswan, Egypt Mahmoud El-Hakim/Arab Bureau for Design, Architects

Although the museum's original design, conceived in the early 1980s, was compromised in its execution, the jury felt it showed a high quality of construction and attention to detail. The structure, housing archaeological artifacts endangered by the dam construction, is concrete frame and sandstone.



New Life for Old Structures, Iran Urban Development and Revitalization Corporation, Tehran

Eight buildings, which are part of a government program for restoring old structures in Isfahan and Yazd, were premiated. Awards went to Khan Bathhouse, Yazd (far left and below); the Hosaynieh Nazem ot-Tojar, Yazd (left); and the Nilforoushan House, Isfahan (below left).



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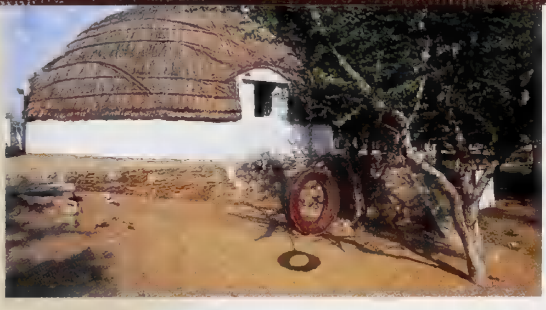
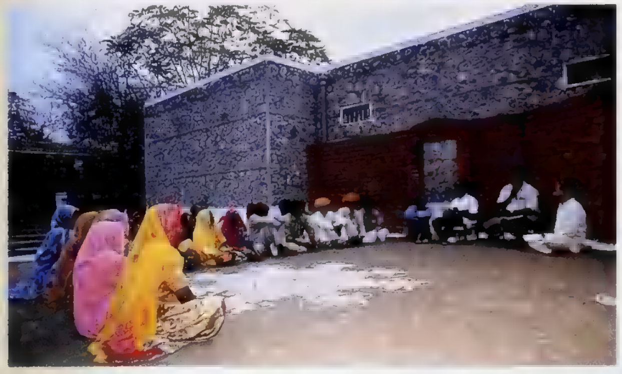
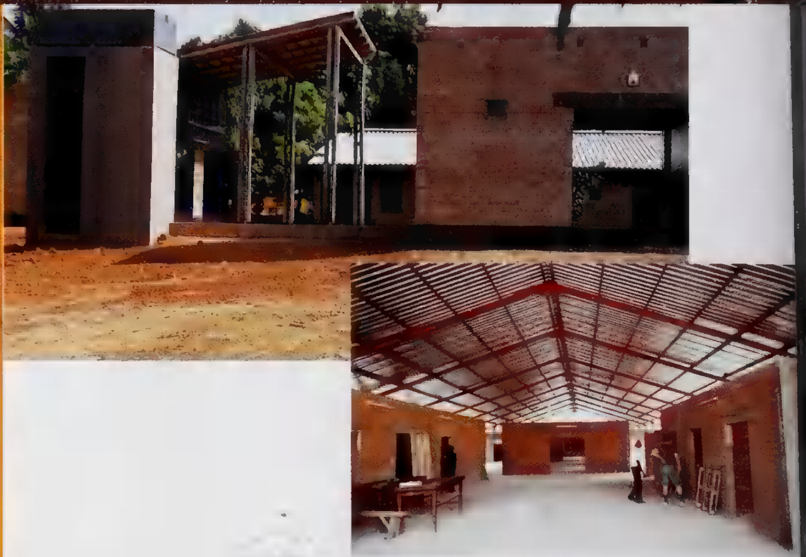
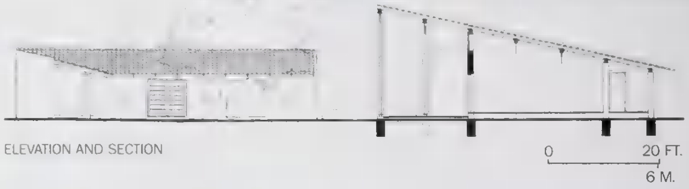




Barefoot College, Tilonia, India
Barefoot Architects

The college, founded in 1972, is intended to present a pedagogical alternative to institutionalized education. Located in Rajasthan, the buildings are the result of urban professionals working with local villagers. The community center features a geodesic dome in thatch; other materials include mud brick, stone, cement, and some steel.

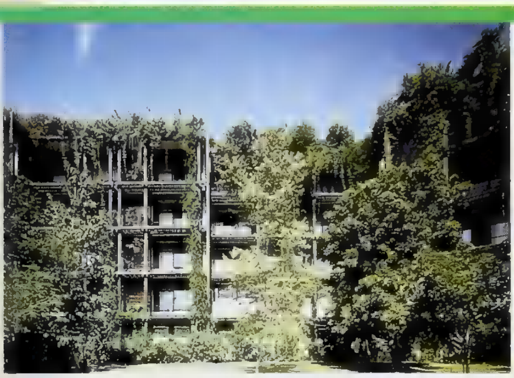




ELEVATION AND SECTION

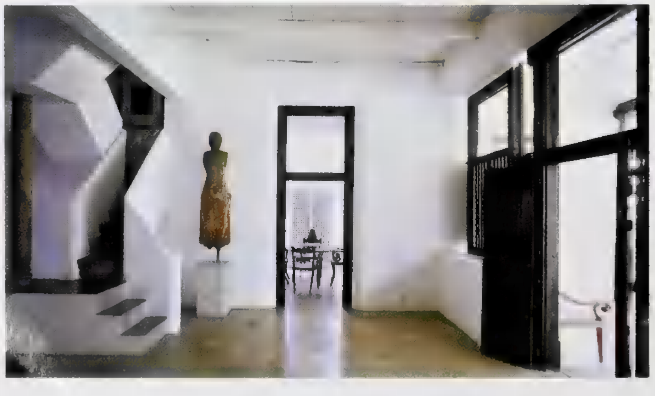
Kahere Poultry Farming School, Koliagbe Kindia, Guinea
Heikkinen-Komonen Architects

This cluster of buildings features straightforward vernacular forms composed of locally made bricks, woven split-cane panel ceilings, and pigmented concrete floors. Columns and trusses are timber and metal.



Chairman's Award
Geoffrey Bawa, Architect, Sri Lanka

The lifetime work of this influential architect born in 1919 was recognized by the award program in 2001 for its exemplary sensitivity to the landscape, as shown by the Kandalama Hotel, Dambula (above) and Jayakody House in Bentala (below).



2001 Aga Khan Award

Process: *The nine-member Master Jury reviewed 427 submissions, of which 35 were then examined by a technical review team visiting the sites. Ultimately nine projects were awarded. The triennial Aga Khan Award for Architecture is administered by the Aga Khan Trust for Culture, which in turn is part of the umbrella organization, the Aga Khan Development Network. The AKDN comprises three types of agencies: economic, social (health, education, and planning and building services), and cultural.*

Steering committee, 2001: *His Highness the Aga Khan, chairman, Selma al-Radi, Charles Correa, Kenneth Frampton, Frank O. Gehry, Zaha Hadid, Luis Monreal, Azim Nanji, Ali Shuaibi, Suha Ozkan*

Jury 2001: *Darab Diba, Abdou Filali-Ansary, Dogan Hasol, Mona Hatoum, Zahi Hawass, Ricardo Legorreta, Glenn Murcutt, Norani Othman, Raj Rewal*

Technical review jury 2001: *Arya Abieta, Akram Abu Hamdan, Hana Alamuddin, Salma Samar Damluji, Dalila El Kerdany, Homeyra Ettehadieh, Omar A. Hallaj, Khadija Jamal, Romi Khosla, Jolyon Leslie, Rahul Mehrotra, Ralph Mills-Tettey, Ashraf M. A. Salama, Fernando Varanda, Aysil Yavuz, Yildirim Yavuz*

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tourism is the most interesting to us because we want to underscore the value of pluralism. Having people visit sites or complexes that they would not normally see or learn about can be very positive for societies that tend to be rigid in their attitudes. We have to recognize the need for tourism, but we also have to recognize that it needs to be managed. Absolute freedom in the tourism field will end up with serious consequences.

RI: And how has the education component played out at Harvard and MIT with the Aga Khan Program for Islamic Architecture?

HH: The question facing us was how to design an educational resource that would have the maximum possible impact and at the same time have a legitimacy that would make it acceptable to much of the Islamic world. Ultimately, people who are trying to reposition what they're doing look to the most credible, most competent resources.

I asked MIT whether they would be willing to put the entire program together—with Harvard addressing a cultural component, and MIT addressing the professional one. They would build a system whereby we would be able to educate people who are already practitioners, or people who wanted to become practitioners. The whole program went into place, and the two universities have worked together in a very solid way. I think that the graduates from these programs are now having an impact, whether they are museum conservationists, practicing architects, or research students.

There has been considerable support in the Islamic world for the program being open to all people from all backgrounds who wanted to work in Islamic societies, whether or not they were Muslim. I think the split at this time is 50-50 between people from the Islamic world and people from outside.

RI: And now you've established a new Web site [ArchNet.org], which makes the full range of information so much more accessible to a larger group of people. How do you see it functioning?

Kahere Poultry Farming School, in Koliagbe Kindia, Guinea, was designed by the Finnish architects Heikkinen-Komonen using local construction techniques and Modernist forms.

HH: I didn't want the Harvard-MIT program to be an ivory tower, located in Cambridge, Massachusetts. It had to articulate its worth toward the Islamic world. We used to publish the magazine *Mimar*. It was good, but we still wondered if this was the best way to communicate this information outside MIT to the Islamic community. Then, of course, the Internet broke down those barriers; it provided an extraordinary opportunity. Since MIT is so qualified in these areas of communication, it was the right resource to make use of this activity. I'm hopeful that when ArchNet.org is officially launched, it will become a global resource to people working for change in the physical environment in Islamic societies.

RI: You presented the Chairman's Award this year, which is not an annual event, to Geoffrey Bawa, the Sri Lankan architect. What is the significance of that?

HH: It is an award that, after this year, will only have been given three times. The award stems from the consensus of the steering committee and does not have an independent jury. The people who run the award, who watch how the awards work, and who note over one or several cycles that a certain individual has had a massive, lifelong impact, make the selection.

RI: I personally discovered Geoffrey Bawa through *Mimar*, which put a name and a face to the architectural award program. In terms of public recognition, however, award winners in the rural cultures are more difficult to identify with. Names and faces are part of contemporary media reality, where we tend to focus on people rather than on ideas. Can you comment on that?

HH: You are correct, but constituencies react differently to the prizes. Many village constituencies tend to look at other villages. The process of change is not through an architect. It is through people or through government programs. One of the things the award has tried to do is get away from the notion that only architects can bring about change.

RI: With regard to bringing about change, can you describe your own experiences as a developer, working with architects and planners?

HH: I learned at a very young age that the resources that we harness to effect change are hardly ever going to be sufficient to meet all the demands. That's not true now in the entire Islamic world—there are some parts that are very, very wealthy, and they don't need those resources. The parts of the world I'm working in are generally poor in resources. If you are resource-poor, then you rely on financial investments. You try to make investments in projects that can become self-sustaining, so you don't have to keep investing in them year after year, and they don't become burdens on society. Furthermore, I have been looking at questions of flexibility of buildings, and the way buildings have to adapt to changing society, particularly in the social field.

Also, I give credence to the notion that people's attitudes toward home are modified if they have an acceptable physical environment. When given the opportunity, people will improve the physical environment they live in. They put a metal shade roof on a hut or they move to a place where there's fresh water. The physical environment is part of people's psyche. So I think that in terms of encouraging development, one of the most important aspects is to help people live in better environments.

RI: How do you organize your efforts for the long term?

HH: There are a number of procedures that we employ, most of which have three- and five-year planning processes. We look at our resources and figure out their availability or shortfall. We ask ourselves with whom should we associate to get things moving. For example, in humanitarian aid, the spectrum of support entities is very large, but support for culture is very small.

Because of the way AKDN [the Aga Khan Development Network] is structured, it can bring this multi-input process into these environments. It's not all the Trust for Culture. In addition to the cultural branch, the AKDN is composed of an economic development arm, and a social development arm. The latter one includes the foundation, health services, education services, and planning and building services components. This means we can build what I would call a form of support net going into these environments. That is just about the only way you can really create a sustainable process of change. Just influencing one aspect, whether it's agriculture or commerce, doesn't really work in development. Don't ask me why.

The nature of AKDN is that we go out into the field. Many development organizations don't have this intimate relationship with the field that we have. And it's the intimacy that has given us a bit of an edge in terms of understanding these areas. ■

For a full discussion of the Aga Khan's views on self-help rural economies, the program at Harvard and MIT, and other topics, go to Architecturalrecord.com.

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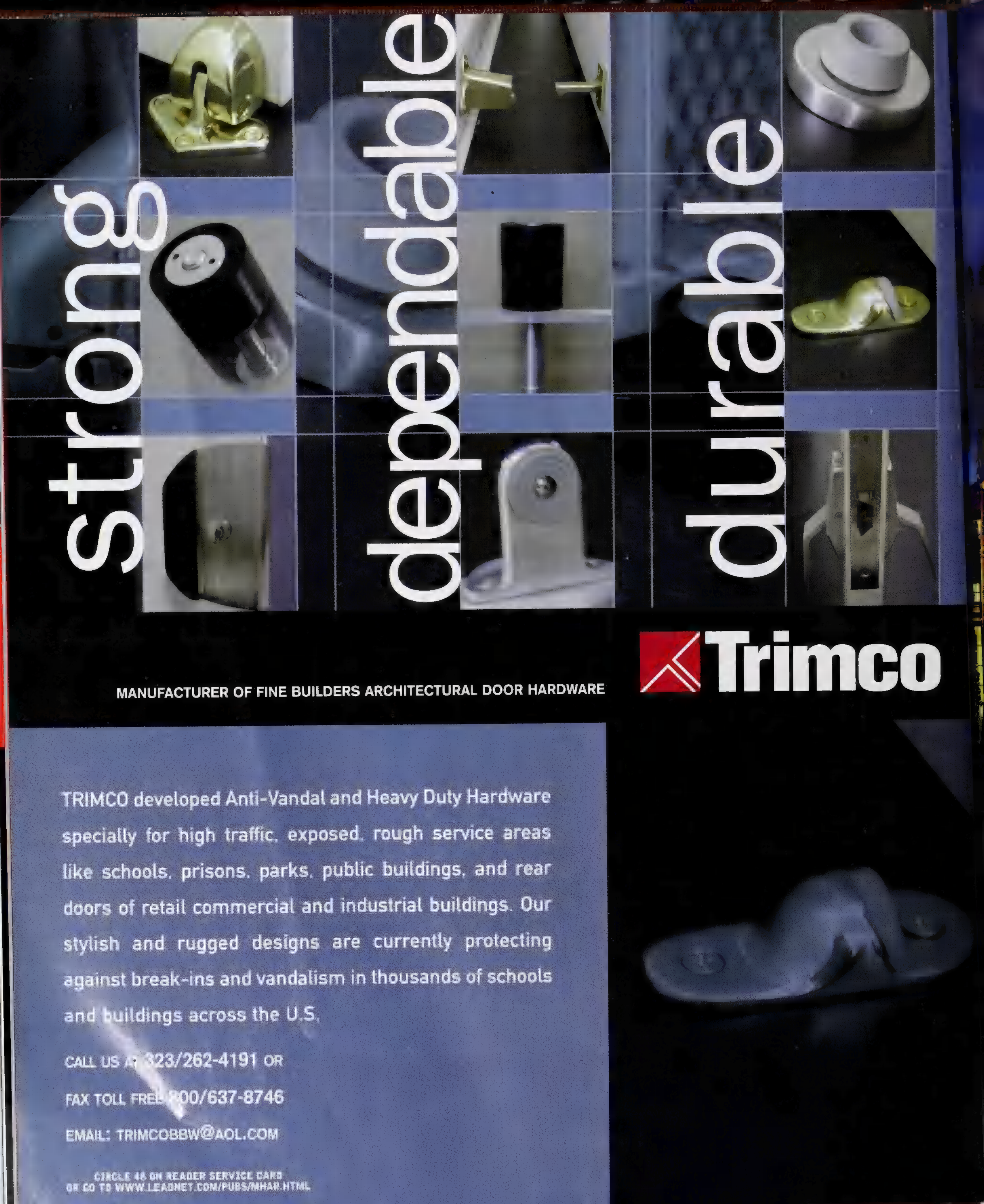

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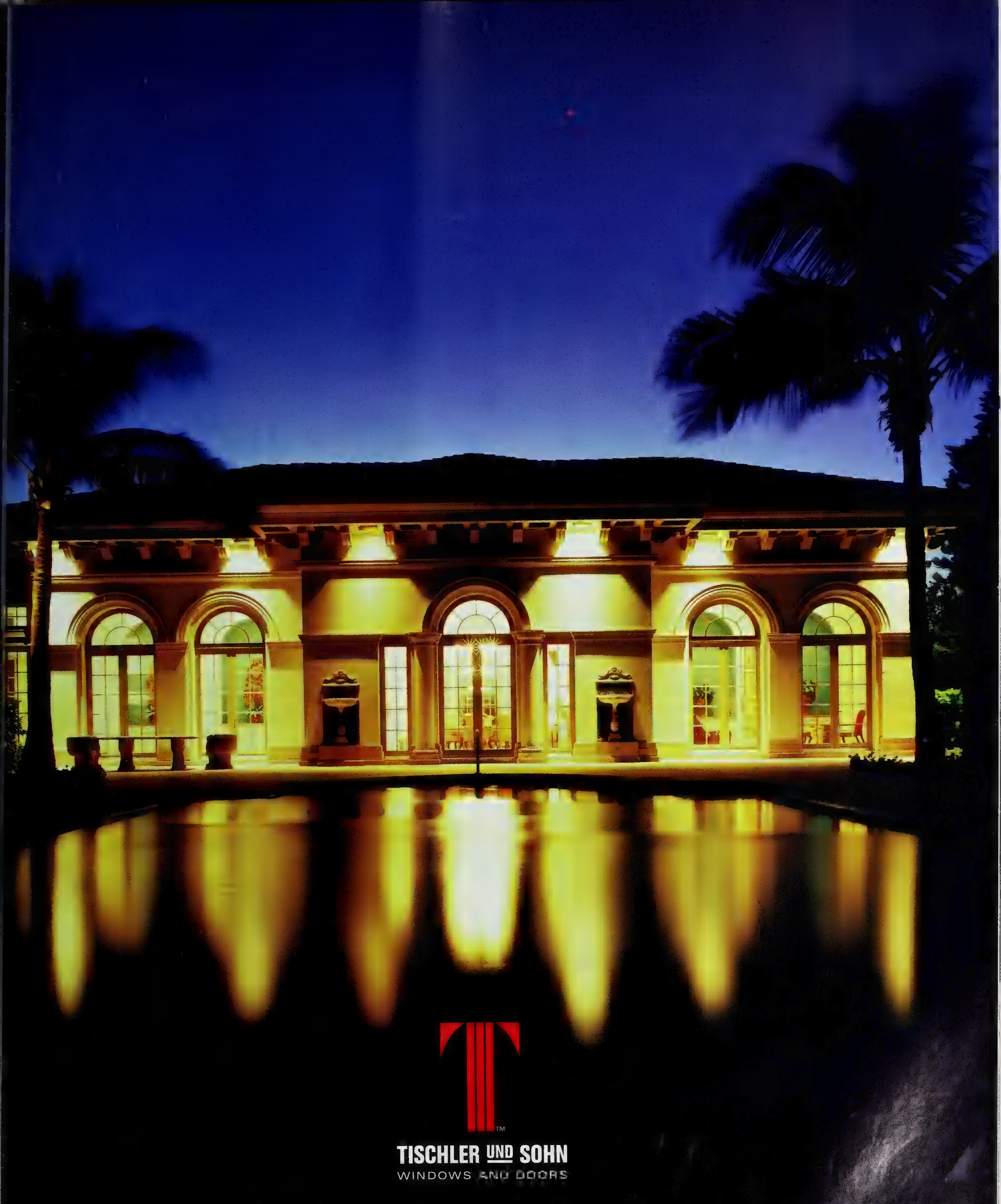

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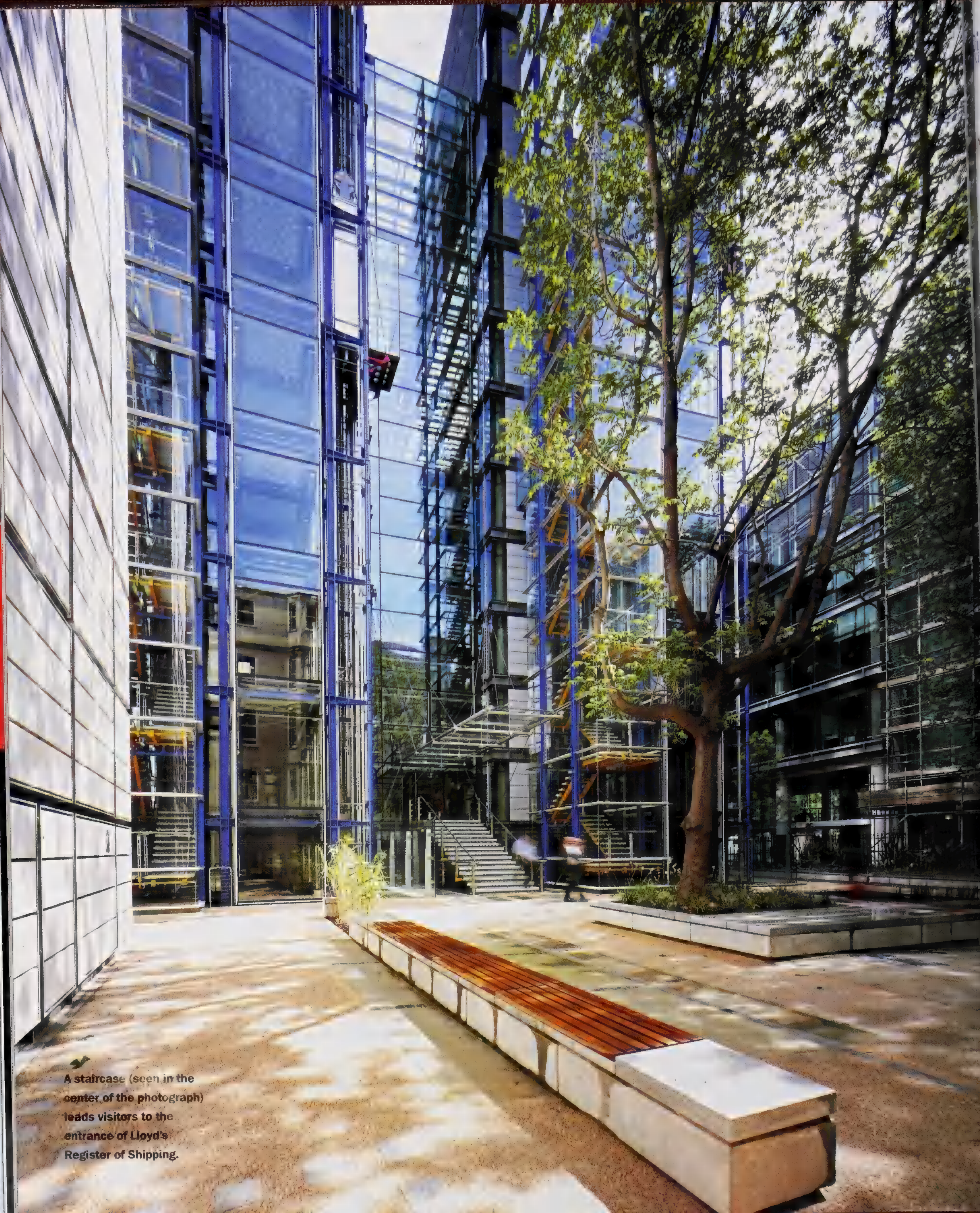


A staircase (seen in the center of the photograph) leads visitors to the entrance of Lloyd's Register of Shipping.

Richard **Rogers Partnership's** new building for **LLOYD'S REGISTER OF SHIPPING** meets nvironmental systems and siting challenges

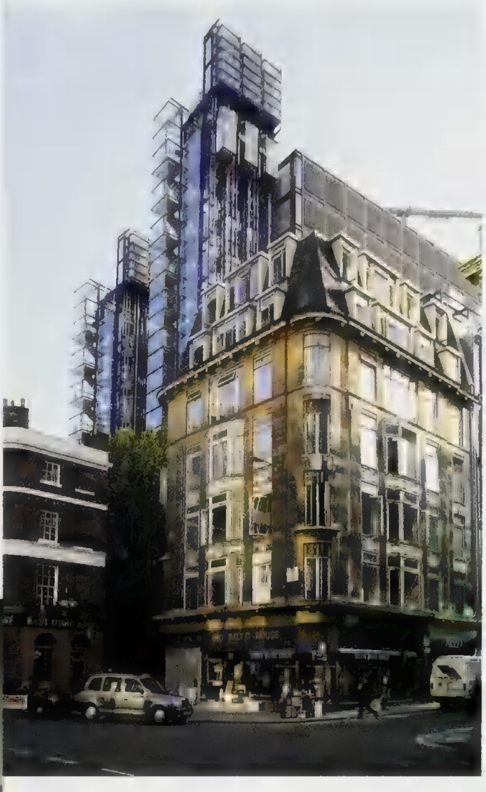
By Kenneth Powell

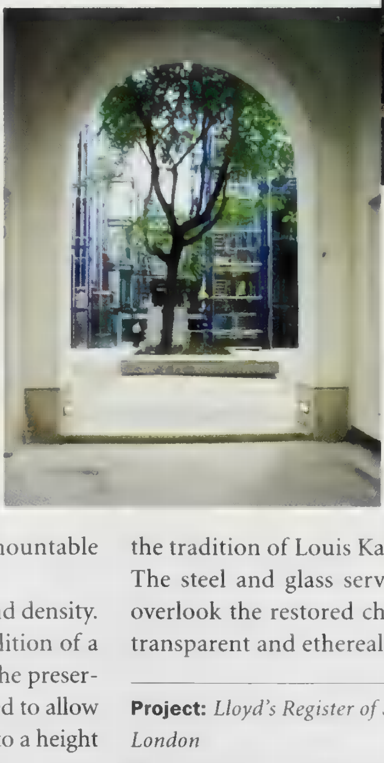
Richard Rogers's recently completed Lloyd's Register of Shipping (LRS) is only a short walk from Lloyd's of London, the architect's first major British building, acclaimed as an icon of high-tech when it opened in 1986. Lloyd's and LRS share common roots but are essentially autonomous institutions—among the oldest and most august in the City of London. LRS—the "register" is the basis for registering and insuring shipping worldwide—moved to Fenchurch Street, on the eastern edge of the City, in the late 19th century. Its splendid Arts and Crafts Baroque headquarters, designed by T.E. Collcutt, opened in 1901 and contains interiors that are among the finest in the City.

LRS rapidly outgrew the Collcutt building, expanded into adjacent properties and, in the 1920s, acquired and demolished the Georgian church of St. Katherine Coleman. It was replaced by Haddon House, a steel-framed, stripped Classical block by Collcutt's successor, Stanley Hamp. The old churchyard was preserved. By the 1980s, the LRS had colonized every available space on the packed and irregular plot contained by Fenchurch Street, Lloyd's Avenue, and the tracks into Fenchurch Street Station. There seemed to be little scope for a comprehensive development of the site—which now lay within a Conservation Area—so LRS began to consider relocating its 1,300 staff out of London. In 1993, Richard Rogers Partnership (RRP) was commissioned to produce proposals for a greenbelt site in Hampshire; however, insurmountable objections there drove LRS back to the City.

The overriding issues at the London site were scale and density. The 250,000 square feet needed would require the total demolition of a number of existing buildings, including Haddon House, and the preservation of the facades of others. Although planners were prepared to allow this, the City conceded that the scheme would involve building to a height for which there was no precedent in the Fenchurch Street area.

LRS sought consent for a new gateway block on Fenchurch Street, but this was denied—only on the narrow Fenchurch Place, to the west, is the development allowed to emerge onto the City streets. Collcutt's 1901 building has been painstakingly restored, provided with new services in a separate core, and conveniently linked to the new development.





Some original LRS structures were integrated into the new complex (right). The new building entry can be seen through an arch on Fenchurch Street (below).

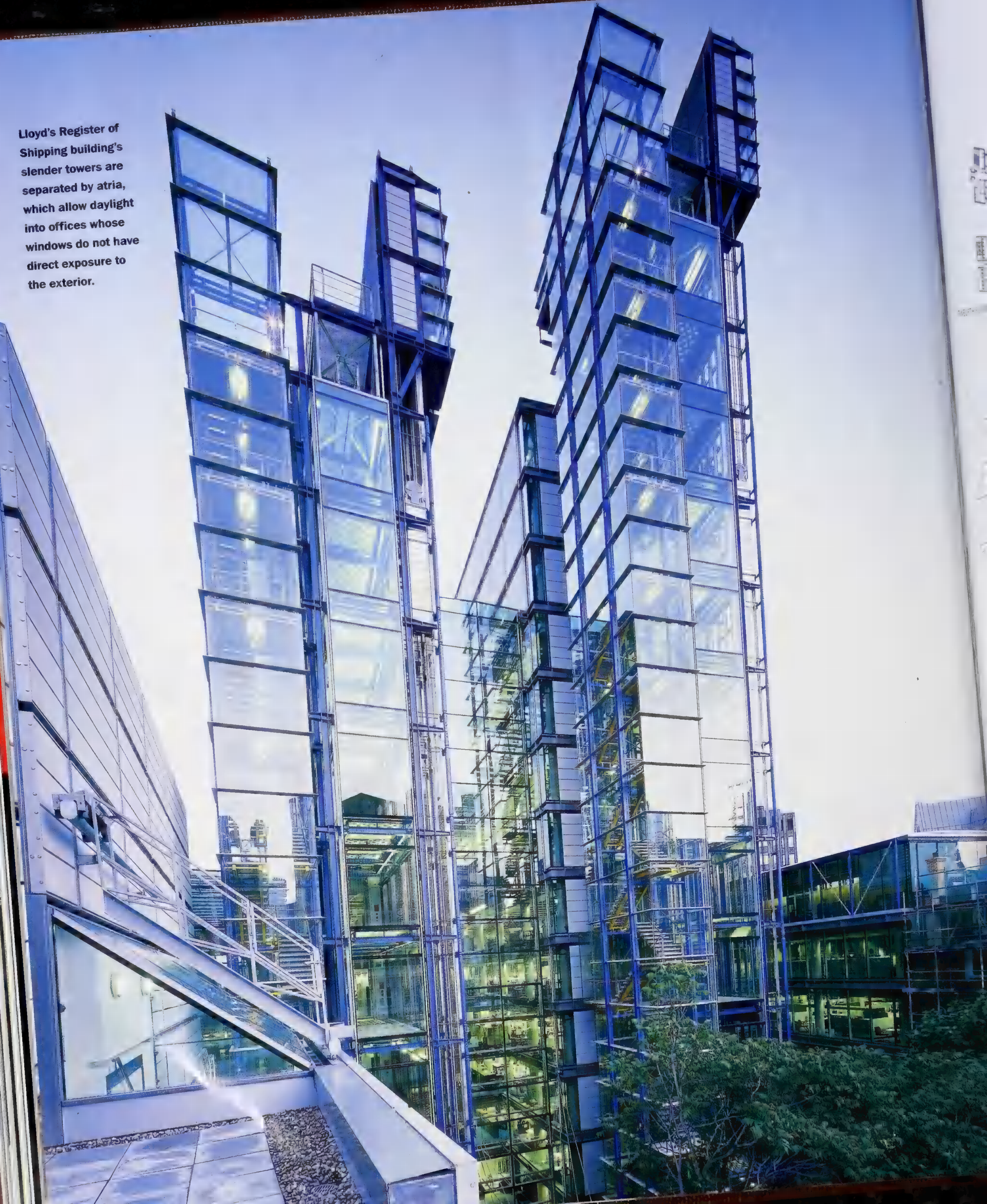
The dynamic excitement of Rogers's 1986 Lloyd's of London was derived from its deliberate contrast between "served" and "servant" spaces, very much in the tradition of Louis Kahn. At LRS, Rogers has pursued the same idea: The steel and glass service towers, containing lifts and stairs, which overlook the restored churchyard off Fenchurch Street, are startlingly transparent and ethereal, with every element fastidiously detailed. The

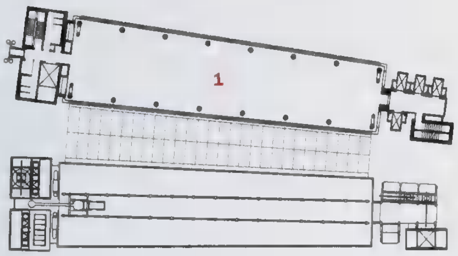
Project: *Lloyd's Register of Shipping, London*
Owner: *Lloyd's Register of Shipping*
Architect: *Richard Rogers Partnership*
Project manager: *Richard Ellis*
Structural engineers: *Anthony Hunt Associates*
Mechanical and electrical engineers: *Ove Arup & Partners*
Planning consultant: *Montague Evans*
Landscape architect: *Edward Hutchison*
Lighting designer: *Lighting Design Partnership*
Stone consultant: *Carrig*
General contractor: *Sir Robert McAlpine & Sons*

Kenneth Powell is an architectural critic and journalist based in London. He contributes to many newspapers and journals and is the author of the two-volume Complete Works of Richard Rogers *and* New London Architecture.

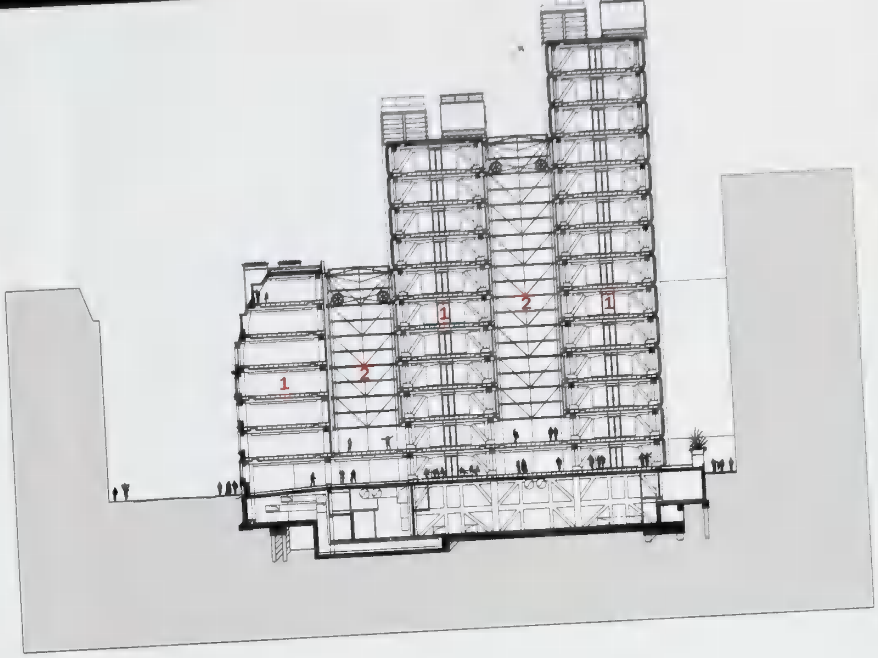
PHOTOGRAPHY: © KATSUHISA KIDA (OPPOSITE AND TOP RIGHT); GRANT SMITH (MIDDLE)

Lloyd's Register of Shipping building's slender towers are separated by atria, which allow daylight into offices whose windows do not have direct exposure to the exterior.





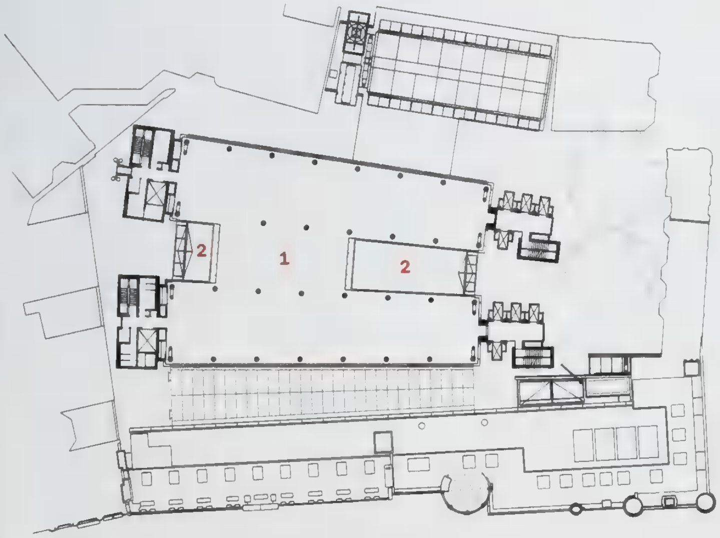
TWELFTH FLOOR



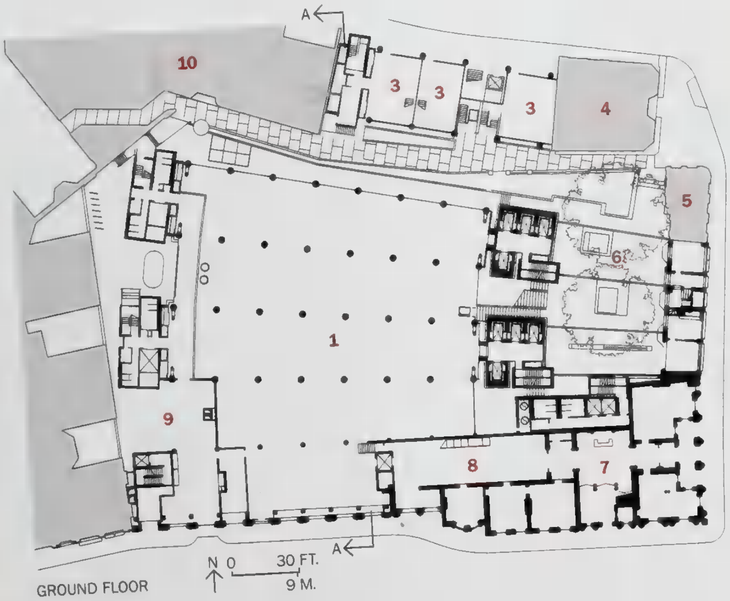
SECTION A-A

1. *Offices*
2. *Atrium*
3. *Retail*
4. *Black Sea and Baltic House*
5. *East India Arms*
6. *Churchyard*
7. *Entrance hall/ reception*
8. *Staircase*
9. *Service yard*
10. *Fenchurch Station*

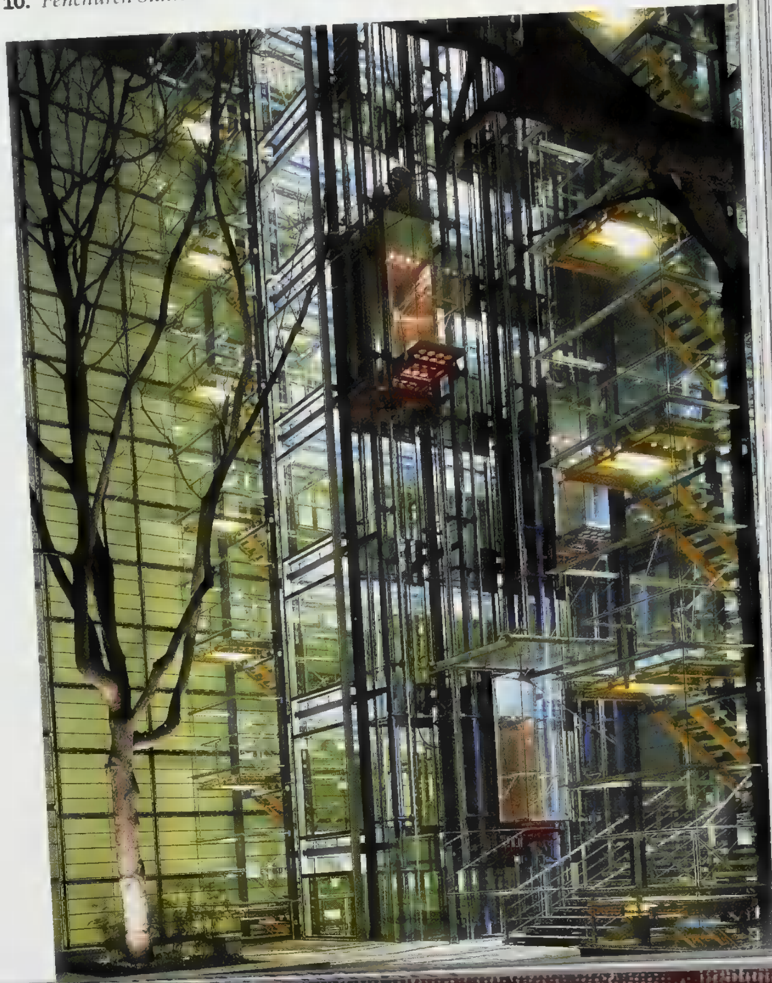
Rogers has deliberately contrasted the "served" and "servant" spaces: The steel and glass service towers are ethereal and transparent, with every element fastidiously detailed, while the adjacent office slabs appear as solid and unadorned.



EIGHTH FLOOR



GROUND FLOOR



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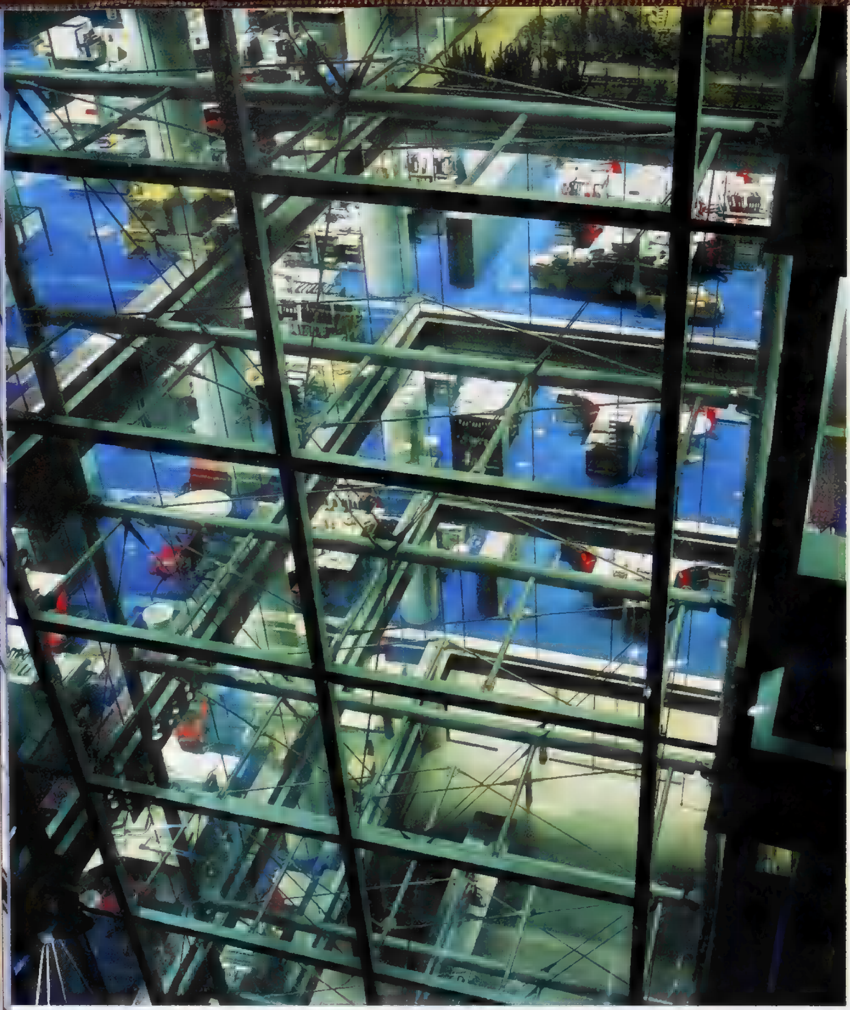

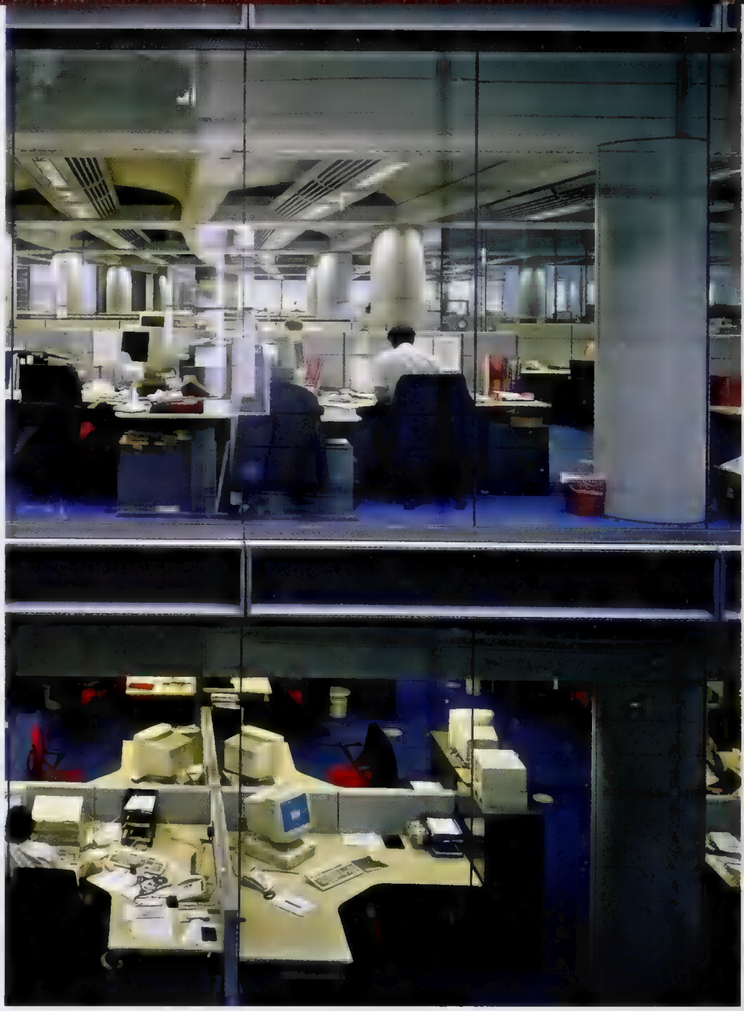

The glazed atria allow daylight to penetrate deep into the building (above left). HVAC for the building is delivered through structural members called "chilled beams." The beams also carry the lighting, sprinkler, and p.a. system, and they are centered within each ceiling vault (above right).

office slabs as seen from the street appear to be solid and unadorned. The effect of the juxtaposition is dramatic.

The spatial strategy of the scheme is also closely linked to a radical environmental agenda. By placing most of the offices in two slender slabs of 11 and 14 stories, flanked by lower blocks and connected by glazed atria, the architects provided offices with generous daylight serviced by low-energy ventilation systems. By alternating the wedge-shaped offices with the atria dividing in a fan-shaped grid, it is also possible for LRS to subdivide the building lease-office space to others if this should become necessary.

THE ARCHITECTS PROVIDED OFFICES WITH GENEROUS DAYLIGHT AND LOW-ENERGY VENTILATION SYSTEMS.

The naturally ventilated atria act as thermal buffers between the offices and the external climate, so energy usage and carbon dioxide emissions are reduced by up to a third compared to conventional office buildings. This is unremarkable by European standards, but because London developers invariably demand fully air-conditioned offices, the LRS has set a pioneering example.

Rogers's LRS is, on one level, a prestige, bespoke scheme designed to meet a specific client brief. At the same time, its approach to both the working environment and the public domain, combining practicality with the responsible use of technology and integrating uncompromisingly modern design into a historic area, has considerable implications for the future of architecture in the City of London and beyond. ■

Sources

Glass: *Saint Gobain*

Cladding: *Permasteelisa*

Architectural metalwork: *Trollope Colls Elliott*

Core floors: *Luxcrete*

Main concrete structure: *O'Rourke*

Laminate panels: *Formica*

Furniture: *Herman Miller*

Kitchen units: *Ikea*

Elevators: *Kone*

Carpeting: *Millican*

Rubber floor: *Jaymart*

Terrazzo floor: *Simpsons*

Lighting: *Zumtobel; DAL; Thorne; Louis Poulsen*

Electrical accessories: *Wandsworth*

Sanitary fittings: *Armitage Flanks*

Hardware: *Allgood*

Grab bars: *Hewi*

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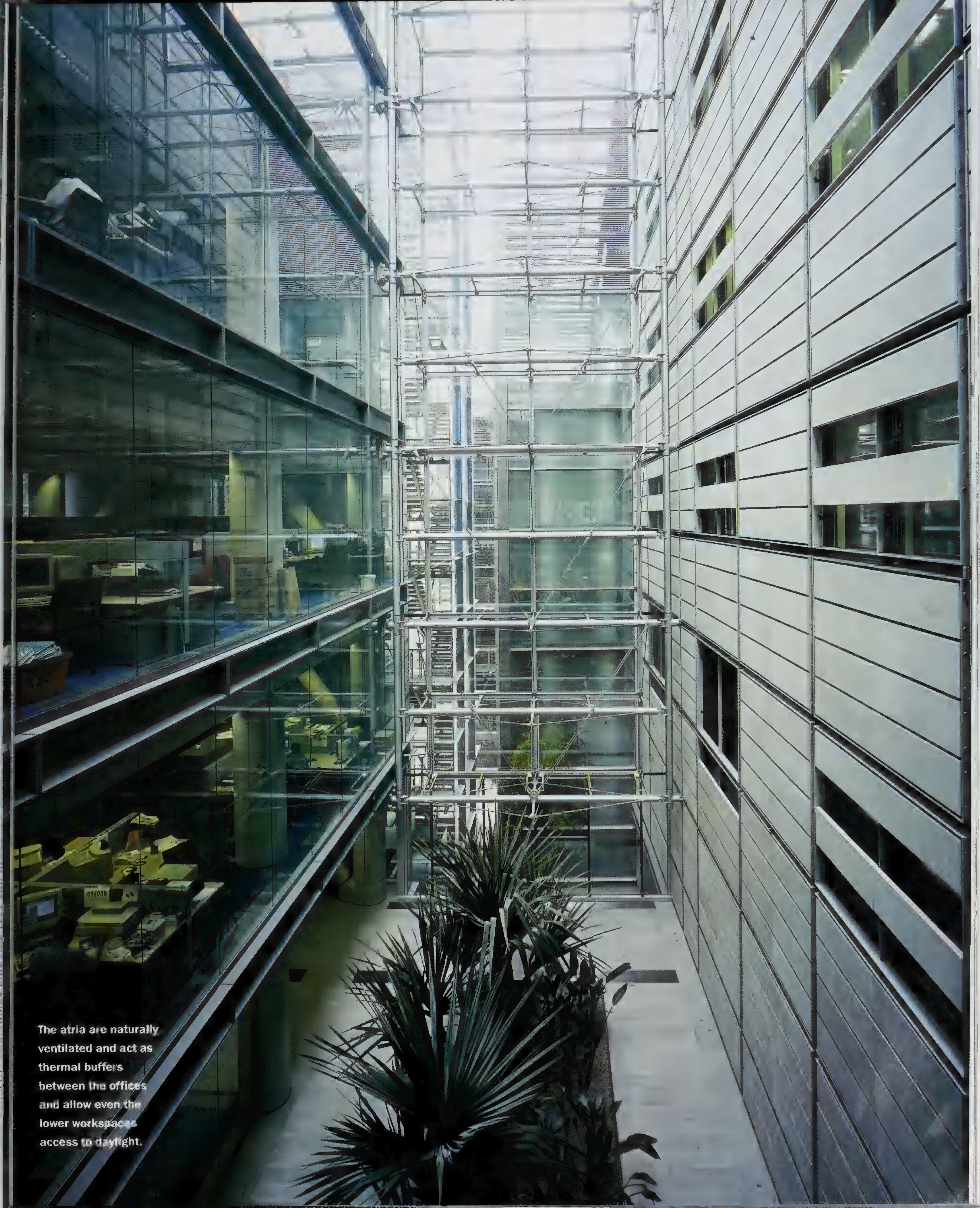
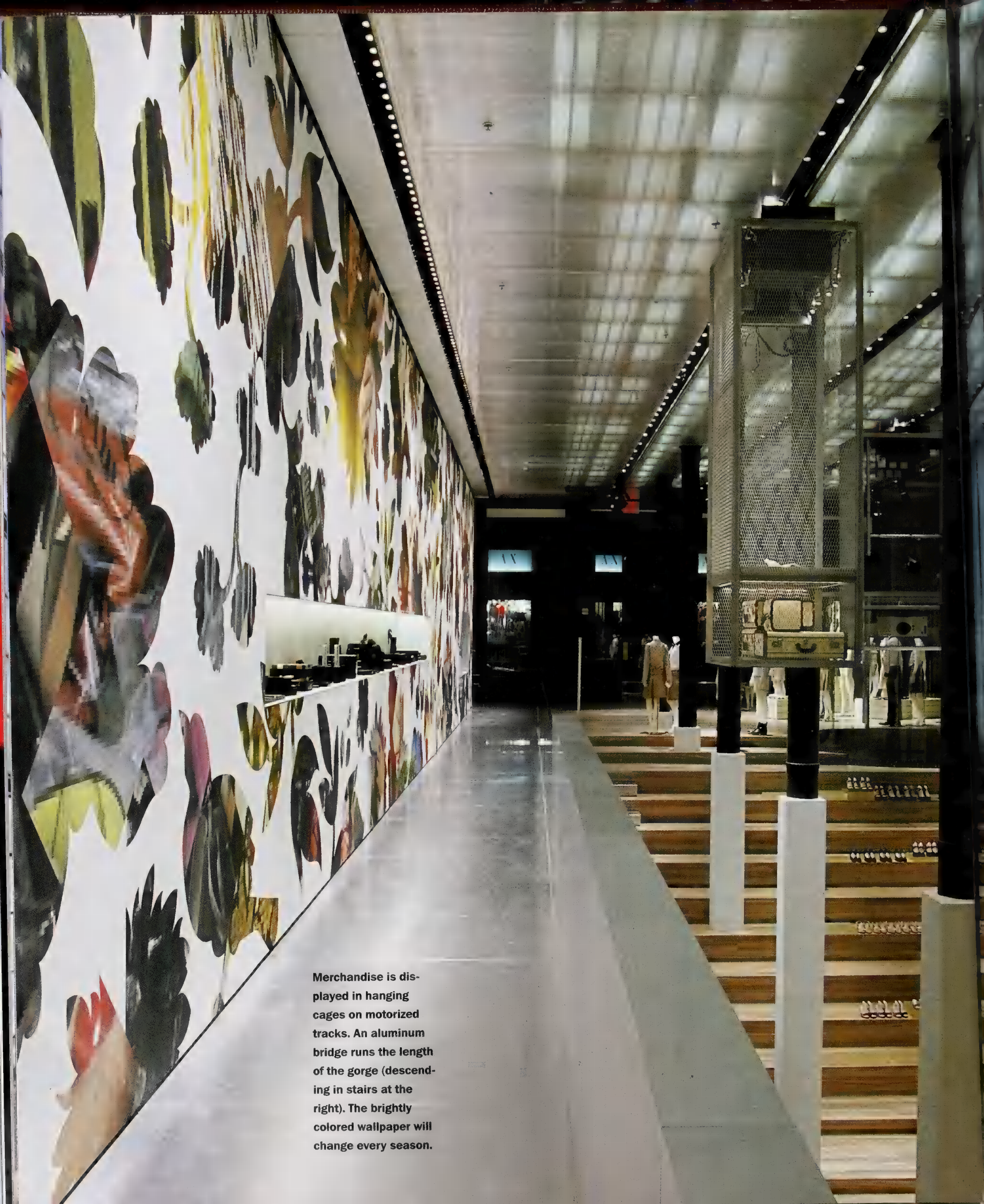


The atria are naturally ventilated and act as thermal buffers between the offices and allow even the lower workspaces access to daylight.



Merchandise is displayed in hanging cages on motorized tracks. An aluminum bridge runs the length of the gorge (descending in stairs at the right). The brightly colored wallpaper will change every season.

PHOTOGRAPHY: © FRANCO ROSSO

A seismic meeting of retail and architecture in the new **PRADA** flagship store by Rem **Koolhaas** in Manhattan's SoHo

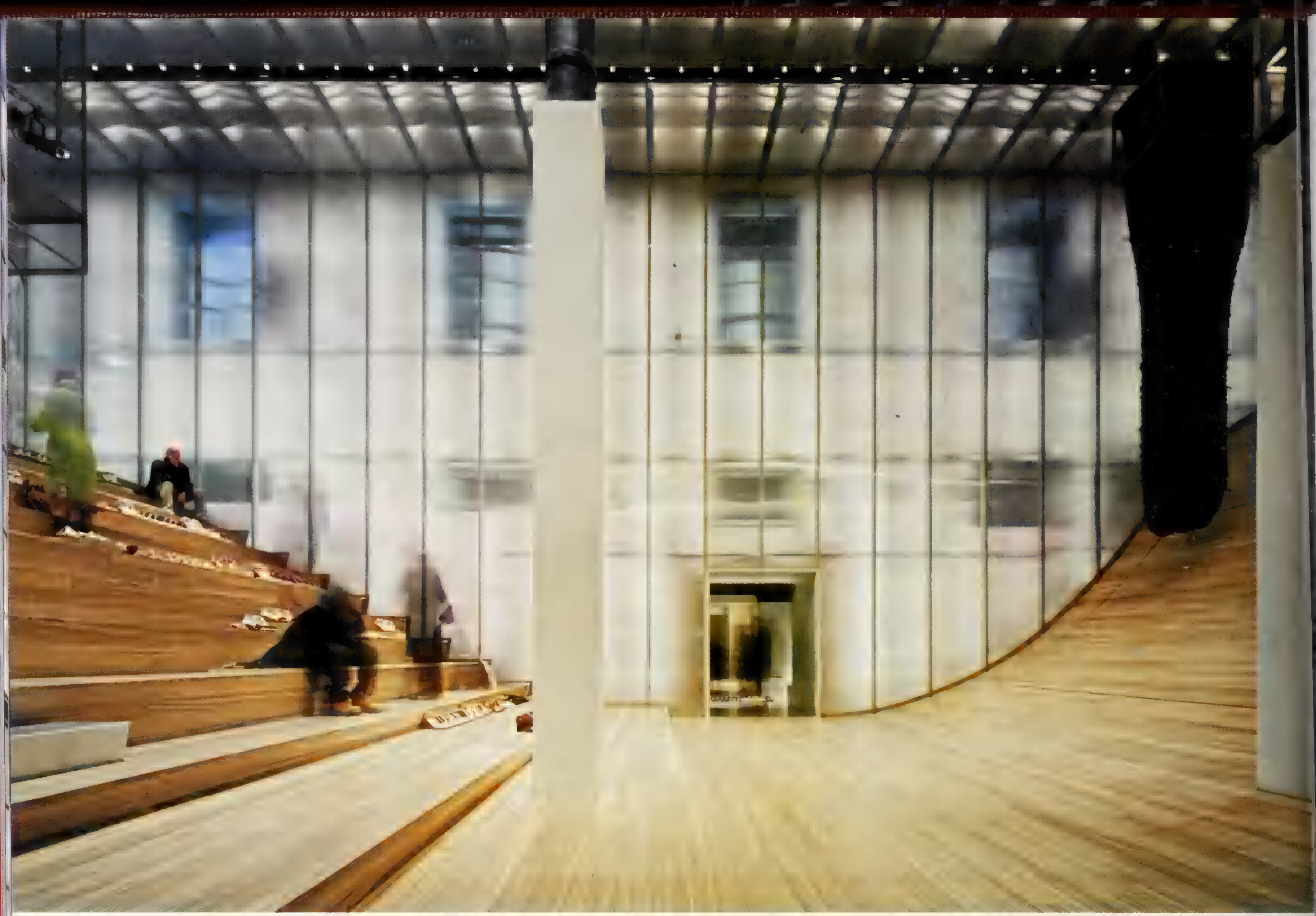
By Sara Hart

However bullish the economic climate, even the toniest retailers rarely fork over $40 million for a flagship store. But the new Prada in Manhattan's SoHo district isn't a store, it's a 23,000-square-foot epicenter, the place where the tectonic plates of merchandising and architecture collide and the earth moves—or so goes the plan. The epicenter concept for Prada grew out of a two-month research project in which Dutch architect Rem Koolhaas and his Rotterdam-based firm, the Office for Metropolitan Architecture (OMA), investigated ways to reinvent the retail experience for the famous Italian fashion house.

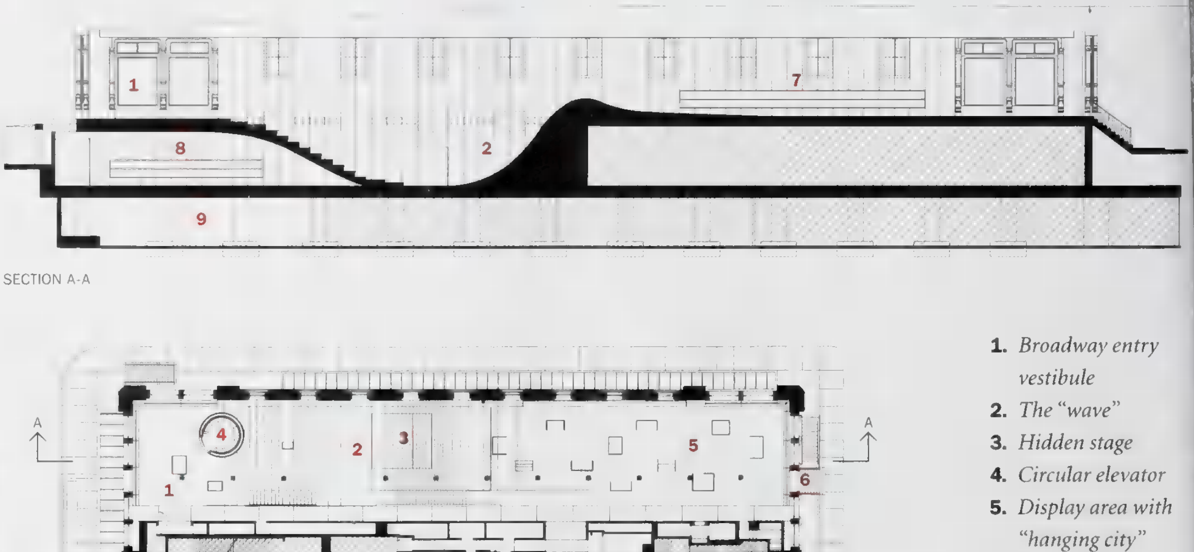
In the 1970s, Miuccia Prada and her husband and business partner, Patrizio Bertelli, turned her grandfather's moribund luggage company, founded in 1913, into the lucrative purveyor of hip, urbane couture. Although it reported record sales of $1.5 billion in 2000, industry watchers warned that its brand was being diluted by ubiquitous knockoffs and forgeries. Recent acquisitions had sapped its cash reserves, and an imminent recession had made everyone jittery. Whereas those conditions are not necessarily life threatening, the cutting edge of fashion is always cutthroat and crowded, and Prada was due for a multidimensional makeover if it hoped to regain its preeminence among fickle fashionistas. Enter Rem Koolhaas, the "It" polemicist with feisty theories about urban evolution and the globalization of culture, who is also an architect.

There can be no epicenter without the Big Design Move. The

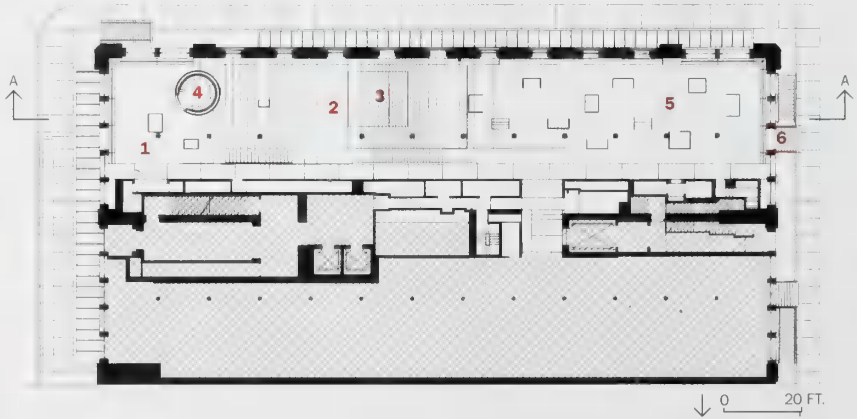
Project: *Prada New York Epicenter, New York City*
Client: *Prada, I.P.I. USA*
Design architect: *Office for Metropolitan Architecture—Rem Koolhaas, principal; Ole Scheeren, project director; Timothy Archambault, Eric Chang, project architects*
Architect of record: *Architecture Research Office—Stephen Cassell, Adam Yarinsky, principals; Reid Freeman, project architect*
Construction manager: *Richter + Ratner*



The terraced slope facing the "wave" (above and opposite, top) is part bleacher, part shoe display. Polycarbonate panels in front of the existing walls separate the old from the new. The signature Prada green shelving (below) makes only a limited appearance.



SECTION A-A



1. *Broadway entry vestibule*
2. *The "wave"*
3. *Hidden stage*
4. *Circular elevator*
5. *Display area with "hanging city"*
6. *Mercer Street entrance*
7. *Built-in displays*
8. *Accessories*
9. *Mechanical room*
10. *Dressing room*

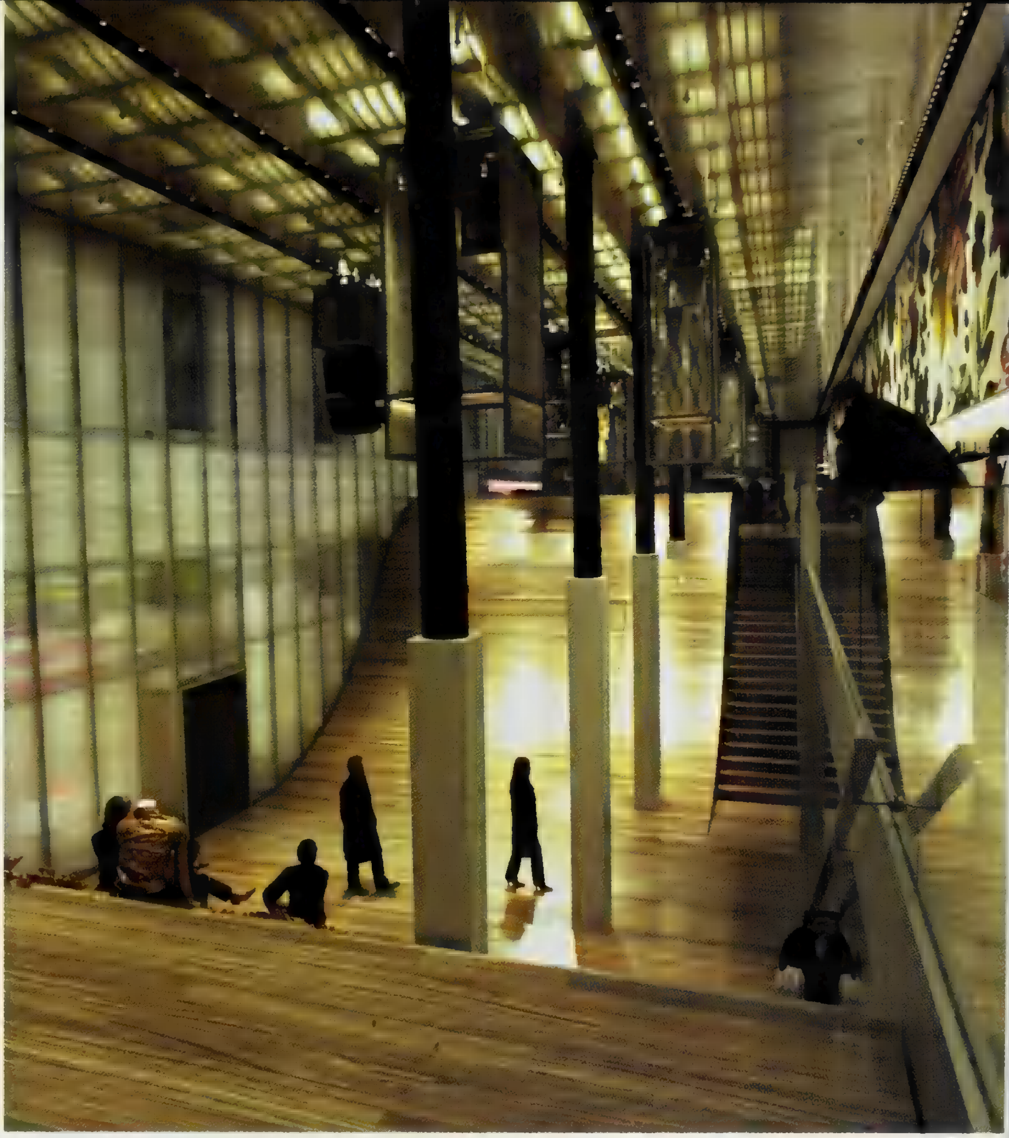
architects removed part of the ground floor of the block-long masonry building to create a deep gorge. One side of the gorge terraces down like bleachers; the other side is a gracefully ascending "wave" out of which a stage unfolds to transform the space into an auditorium for other kinds of consumption, such as cultural events.

The surfaces are a quirky mixture of the refined, the unfinished, and the leftover—existing pock-marked brick glowing behind polycarbonate panels, aluminum mesh cages suspended from motorized tracks, black-and-tan striped zebrawood, marble, unpainted drywall, medical-gel-pad cushions, to name a few. Inside the entrance, a cylindrical, glass elevator, 12 feet in diameter, descends to the level below. Handbags are displayed on a continuous steel shelf, cantilevered from the cab's interior walls, so customers can shop until they drop to the lower level. Grottolike compared to the block-long expanse of the ground level, the lower level has dropped ceilings, multimedia alcoves, compressed rows of hanging clothes. Downstairs is about seeing, touching, and ultimately buying.

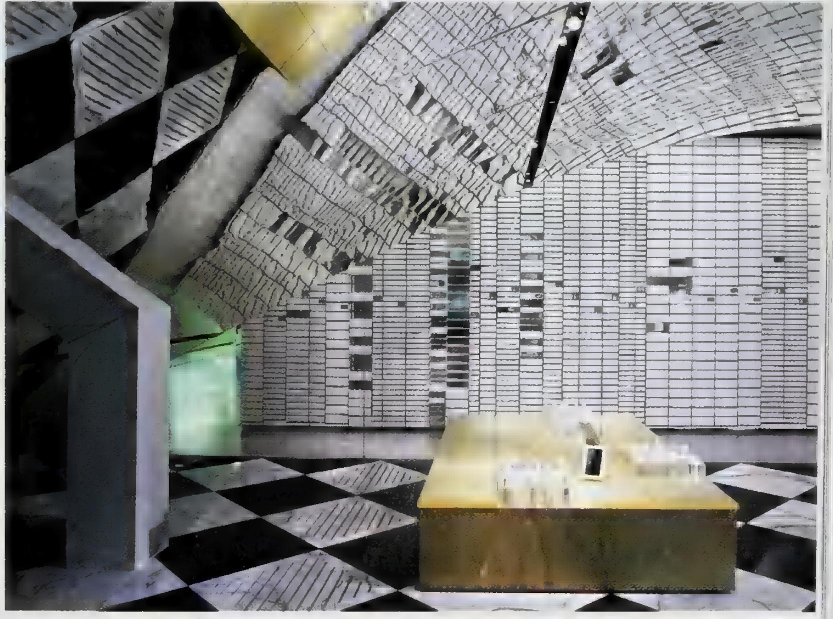
Breakthrough technology, delivered by OMA's alter ego, AMO, rules the experience below. AMO injected the latest high-tech gadgetry into the least public space—the dressing room. The customer depresses a pedal in the floor that turns the transparent glass partition into a translucent shield. Touch screens allow access to a database with information about product availability and alternatives. A plasma screen, embedded in an ordinary mirror, displays a delayed video image of the space recorded by a camera on the opposite wall. The shopper literally views himself coming and going, transforming the action of trying on clothes into a 360-degree solo performance in time and space, the inverse of the exhibitionism encouraged by the "wave." It's not just shopping, it's theater.

The efforts of the 500 designers, consultants, fabricators, and trades people who worked for two years crafting the Prada epicenter were coordinated by New York–based Architecture Research Office (ARO), a young design firm whose own inventive use and knowledge of materials made it both a worthy collaborator and wily navigator through the labyrinth of code compliance and local construction practices.

In *The Harvard Guide to Shopping* (Taschen, March 2002), another Koolhaas collaboration, Daniel Herman defines "The Next Big Thing" as the "recurring promise of a new typology that will deliver greater profits and higher consumer satisfaction." Beyond the sticker shock, this *next big thing* is a grand experiment, and the earth does move. ■



Prada's cosmetics display (below), also reflected in the mirrored ceiling, was designed by Japanese architect Kazuyo Sejima. The wall units act as both storage and display. Shoppers can rest on medical gel pads on plywood platforms. The black-and-white marble floor recalls the floor in the first Prada store, in Milan.



(THIS PAGE, TOP); FRANCO ROSSO (OPPOSITE, BOTTOM AND THIS PAGE, BOTTOM)

Sources

In-store technology: *AMO; kramdesign; Clemens Weisshaar Industrial Design; IDEO Europe; IconNicholson; KTP*

Graphic design: *2x4*

Circular elevator: *Thyssen Krupp; Iros Elevator; Chimetal Srl; Selcom*

Ceiling track system: *Mannesmann Dematic*

Lighting: *Bartco; Elliptipar; Nulux; Creative Light Source; Edison Price; LightLab; ETC; Wendell Lighting; Peerless; Baldinger; TSAO*

Zebrawood flooring: *Haywood Berk (supplier and installer)*

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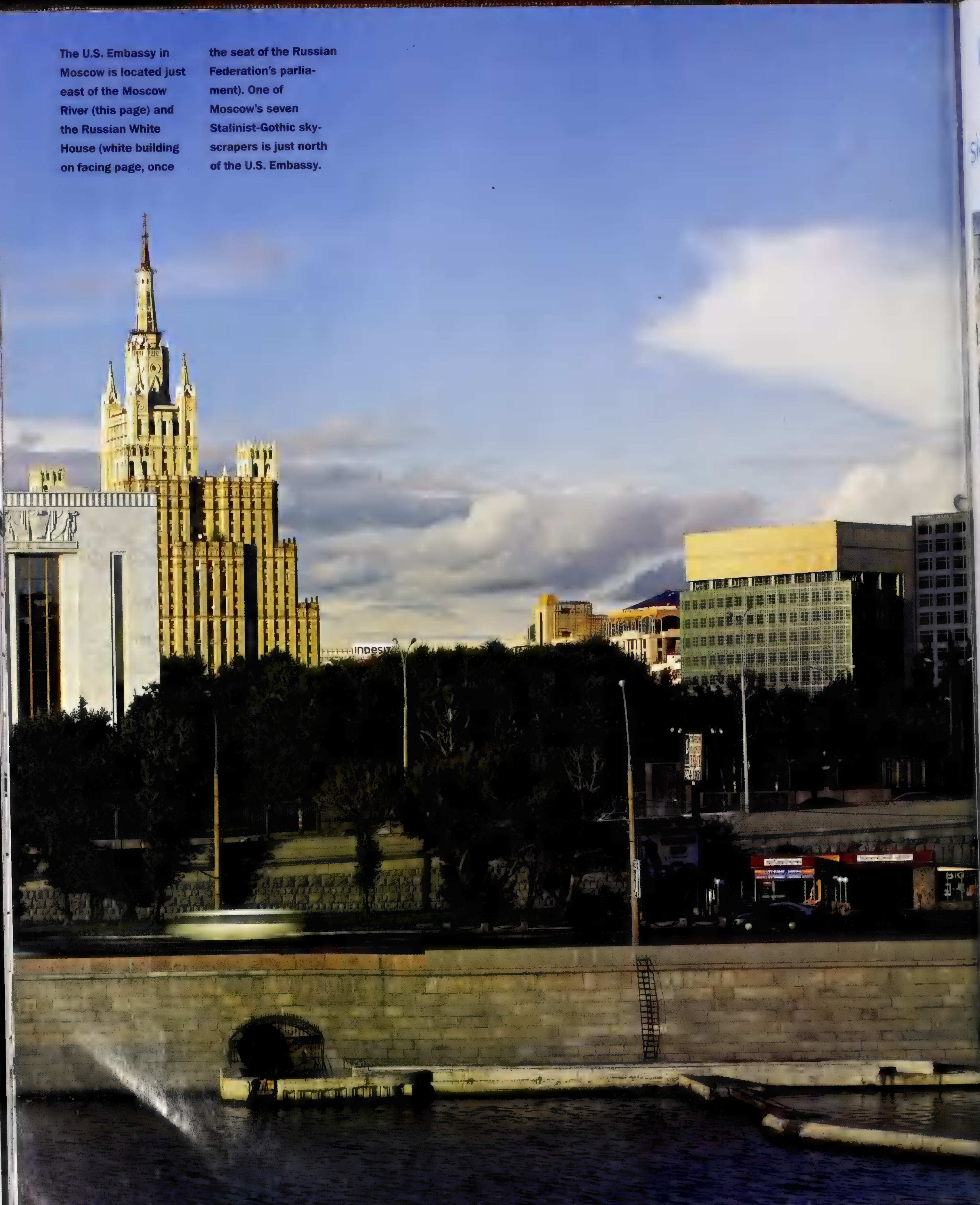


The U.S. Embassy in Moscow is located just east of the Moscow River (this page) and the Russian White House (white building on facing page, once the seat of the Russian Federation's parliament). One of Moscow's seven Stalinist-Gothic skyscrapers is just north of the U.S. Embassy.

More than three decades in the making, HOK asserts American ideals in the Moscow skyline with the U.S. EMBASSY CHANCERY

PHOTOGRAPHY: © ALAN KARCHMER

By John E. Czarnecki, Assoc. AIA

After years of negotiations between the United States and the Soviet Union, contractors broke ground in 1979 for the U.S. Embassy in Moscow—to a design by the San Francisco office of Skidmore, Owings & Merrill (SOM) with New York's Gruzen Partnership (now Gruzen Samton)—but one of the greatest embarrassments of American diplomatic history halted construction of the chancery office building in the mid-1980s (see timeline, following page). Reconstructed in the late 1990s and completed in 2000, the new U.S. Embassy Chancery both literally and symbolically masks America's miscalculation of cold war–era Soviet ingenuity.

Designed by the Washington, D.C., office of Hellmuth, Obata + Kassabaum (HOK), the new chancery uses a portion of the structure that was begun in 1979. In 1985, construction was about two-thirds complete on the initial chancery when the United States discovered that Soviet construction workers had completely bugged the concrete structure itself. The U.S. government spent a decade studying the security breach and determining how to rebuild.

The U.S. has since admitted that it presumed that the Soviets would place bugs in some manner, and it assumed the devices could be easily found and removed. This assumption was a gross underestimation of the Soviets, who made the structure itself into a giant microphone with thousands of bugging devices and decoys, and a power supply embedded in the concrete. Microwaves directed at the building would pick up most transmissions. When their covert devices were exposed, the Soviets had disrupted the American plan for a new diplomatic home.

Hired by the U.S. State Department in the mid-1990s, HOK received a heady charge. Under a plan called "Operation Top Hat," architects oversaw the removal of all exterior walls and the top two floors of the eight-story, partially completed structure, and four floors—the "top hat"—were added under a design led by Bill Hellmuth, AIA, principal of HOK. In the modified plan, the lower six floors of the new 220,000-square-foot chancery include only "nonsensitive" offices. The ambassador's office, as well as other high-level spaces and sensitive equipment, are on the top floors. The State Department demanded a number of specialized security features, including shielding and blast protection, no-break power systems, and raised access flooring. [For security reasons, the architects could not provide further details about the interior above the second floor, the security features, or the building products].

Most expensive U.S. diplomatic construction project

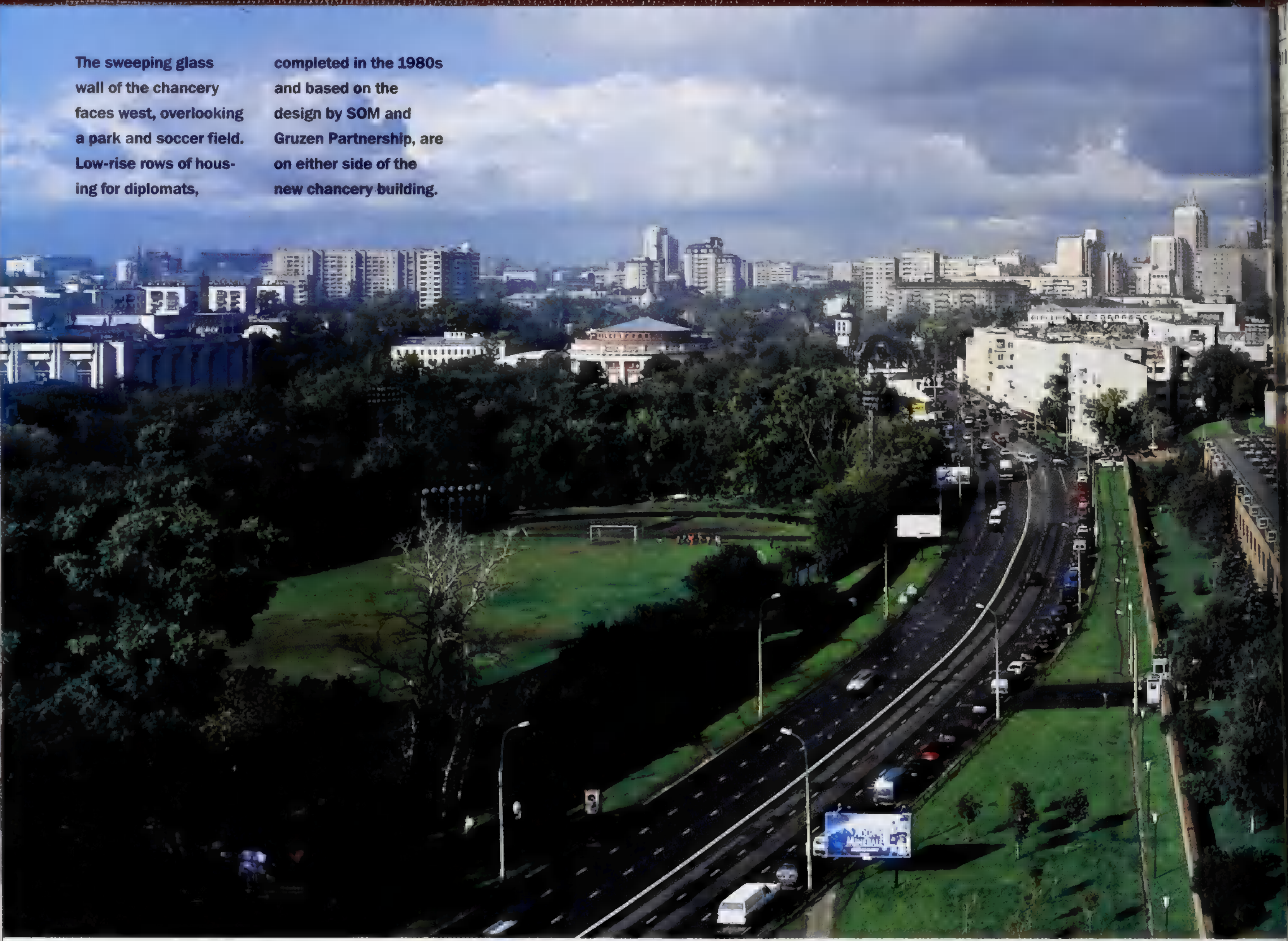
Built behind giant white plastic sheets (see page 92), the chancery construction resembled a work of art by Christo. At about $240 million, including the cost to dismantle the previous structure, the chancery became the most expensive diplomatic construction project in U.S. history. Using only American building materials and only non-Russian construction workers added to the cost.

Project: *U.S. Embassy Chancery, Moscow, Russia*

Architect: *Hellmuth, Obata + Kassabaum—William Hellmuth, AIA, Robert Barr, AIA, Susan Klumpp, AIA, Morgan Williams, AIA, Michael Zajkowski, AIA, Cris Fromboluti, AIA, Jim Albertson, AIA, Susan Marney, IIDA*

Engineers: *Hankins & Anderson (M/E/P and civil); E.K. Fox & Assoc. (M/E/P); Weidlinger (structural)*

Contractor: *Zachry, Parsons and Sundt*



The sweeping glass wall of the chancery faces west, overlooking a park and soccer field. Low-rise rows of housing for diplomats, completed in the 1980s and based on the design by SOM and Gruzen Partnership, are on either side of the new chancery building.

A long road to the new U.S. Embassy Chancery

The U.S. continues to use the building that was its embassy chancery from 1953 to 2000 (above, a block away from the new chancery).

1933 The United States and Soviet Union establish diplomatic relations.

1953 The U.S. Embassy occupies a new 10-story chancery building (left). This building, still part of the U.S. Embassy compound today, was the chancery until 2000.

1964 A State Department memorandum to the CIA assesses the damage of the extensive Soviet bugging of the U.S. Embassy in Moscow in the 1950s and early 1960s: "The Soviets achieved a major intelligence breakthrough, i.e., for a period of years they had the capability to read most, if not all, of our telegraphic messages between Washington and Moscow and between Washington and posts in Eastern Europe."

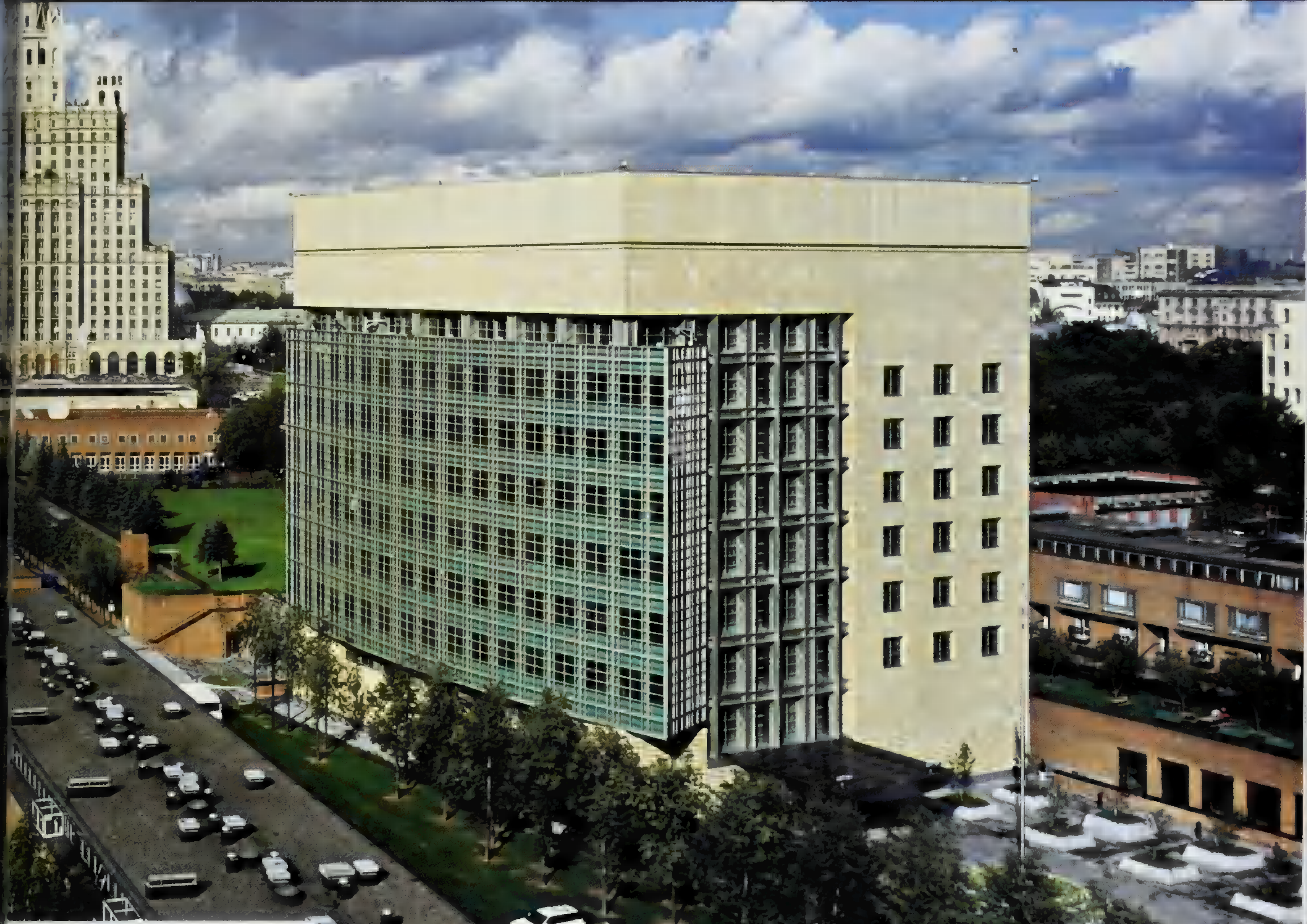
1969 The United States and Soviet Union sign Exchange of Sites Agreement for new embassies. The U.S. accepts an 85-year lease for a 10-acre site in Moscow, and the U.S.S.R. signs an 85-year lease for a site in Washington, D.C.

In an interview with *Pravda* in 1997, Vadim Bakatin, a former KGB chairman, said, "In 1969, when the new [U.S.] embassy building was [foreseen], the idea of stuffing it with the corresponding [eavesdropping] equipment was made."

1972 The Conditions of Construction Agreement is signed by both counties on December 4. The reciprocal agreement governs construction of both the U.S. and Soviet embassies and stipulates that the buildings be completed and occupied simultaneously. The host country would complete site work, foundation, and base structure using its own materials. The interior of the top four floors of each building would be completed entirely by the owner. Other portions of the buildings would be completed by host-country workers under the owner's supervision using materials of the owner's choosing.

1976 The U.S. State Department cost estimate for the new U.S.

PHOTOGRAPHY: © ALAN KARCHMER (TOP); AP/IVAN SEKRETAREV
(THIS PAGE, LEFT); COURTESY HOK (OPPOSITE, TWO)



Soviets bugged the chancery structure (above) in the early 1980s.

Embassy in Moscow is $75 million to $100 million.

1979 After years of negotiations, a final agreement on construction is signed by Jimmy Carter and Leonid Brezhnev at the Vienna Summit.

In September, construction begins on the U.S. Embassy in Moscow, designed by Skidmore, Owings & Merrill. A total of $192 million will be appropriated for the embassy complex of eight buildings. $67 million is appropriated for the eight-story embassy chancery (left), $23 million for the building construction, and $43 million for interior furnishings and security.

1981 Portions of the new Soviet Embassy in Washington, D.C., are complete, as Soviet workers move into the housing facilities.

1983 About 300 Soviet workers walk off the job building the U.S. Embassy to protest the use of a new machine by U.S. officials to find listening devices implanted in the structure. The workers eventually return to the job.

1985 American officials find a vast network of listening devices in precast concrete in the U.S. Embassy Chancery under construction. The devices are on concrete reinforcing bars and steel beams that were produced by Soviets off-site. Made of the same density as the steel they were attached to, the bugging devices could not be detected by X rays. Reinforcing rods in the concrete were cut to specific lengths so that they could act as antennas.

In August, with only 65 percent of work complete, construction is stopped on the partially completed U.S. Embassy Chancery, according to the U.S. government, "due to a security compromise of such consequence that there was serious doubt that the building, if completed, could be used for the purpose intended." Soviet construction workers are locked out of the site.

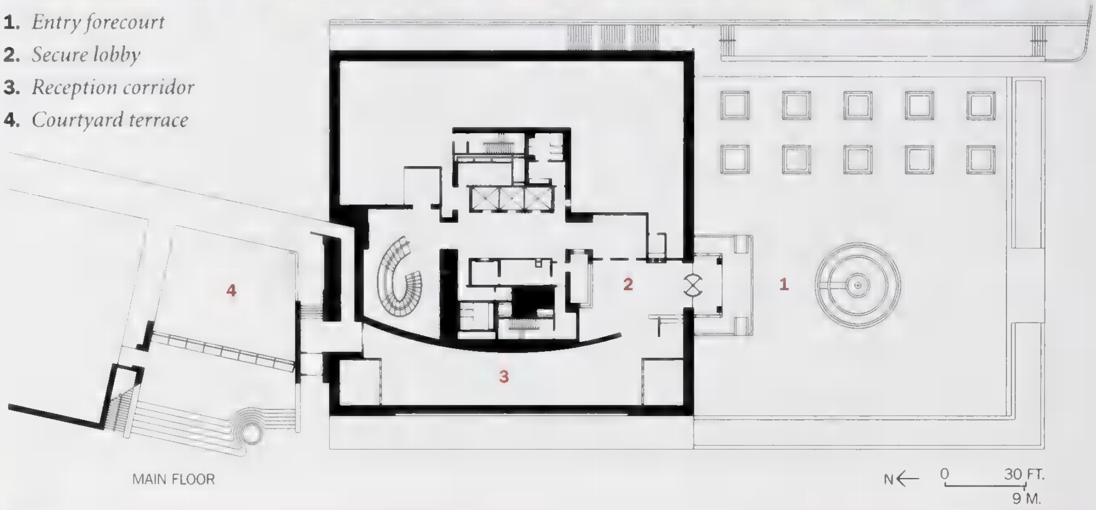
The U.S. discovers that the KGB had made the church across the street from the U.S. Embassy a listening post. The church is nicknamed "Our Lady of Telemetry" or "Our Lady of Perpetual Observation."

1986 The chancery remains partially complete. The rest of the U.S. Embassy complex, including housing for diplomats, is completed.

1987 In January, former CIA director and defense secretary James Schlesinger is asked to assess the Soviets' security damage to the U.S. Embassy Chancery building. In March, the U.S. State Department

The chancery entrance faces a formal forecourt (above left) designed by HOK. Although a large portion is backed by metal panels, the glass wall (above right) offers the illusion of transparency and openness.

1. *Entry forecourt*
2. *Secure lobby*
3. *Reception corridor*
4. *Courtyard terrace*



The new chancery was concealed while being built in the late 1990s.

stopped all secure communication with Moscow. Secure communication would not resume for a year, during which time diplomats either flew between countries to communicate or delivered documents in diplomatic pouches.

In April, Assistant Secretary of State Robert E. Lamb said that the United States knew from the start of construction in 1979 that the Soviets were planting listening devices in the new chancery building in Moscow. "We knew the Soviets were going to bug us," Lamb told the House Subcommittee on International Relations. "We had a strategy for finding, [removing, or neutralizing bugging devices]." But a counterintelligence task force set up to monitor potential bugging did not foresee the possibility that the Soviets would use "the structure itself as part of the bugging," Lamb said.

1989 In January, days before he leaves office, President Reagan recommends that the U.S. Embassy Chancery, which was to be completed during his presidency, be demolished and completely rebuilt. The Moscow Embassy Building Control Office is established. The office director, reporting to the Under Secretary for Management, is responsible for planning, design, construction, acquisition, security, logistics, and budget for the completion of the embassy chancery.

1991 The Soviet Union is dissolved and replaced by the Russian Federation.

In December, KGB chairman Vadim Bakatin presents plans for the U.S. Embassy's eavesdropping system to U.S. ambassador Robert Strauss.

1992 The Bush administration recommends a "top hat" solution to reconstruct only the top floors of the U.S. Embassy Chancery. The Democratic-controlled Congress balks at the plan.

The United States and the Russian Federation reach a bilateral Supplemental Conditions of Construction Agreement on June 15. The agreement permits construction of the chancery by the United States with American materials based on an American design.

Congress appropriates a total of $240 million in fiscal years 1992 and 1993 for chancery construction, making it the most expensive diplomatic construction project in U.S. history. Funding is held, though, until a reprogramming notice detailing the plan is approved.

The State Department withheld much of the chancery building information, including many plan drawings, when presenting it to the Moscow Architectural Review Board for approval. Designed according to American building codes, the chancery easily passed the city's rigorous approvals process. Hellmuth said the city quickly approved the design because, in part, its light color and sweeping curved glass wall make it appear lighter and more welcoming in the post–cold war era than the foreboding, dark masonry facade of the earlier, partially completed structure. Hellmuth explains: "It was built at the right time. Russia wanted to appear open at the time, and the design visually embraces change."

Yellow stone blends with Moscow context

Buildings that stand out and look best in Moscow—a rather grimy city—are those with yellow stucco. Inspired by these buildings, HOK chose a golden yellow Vetter stone from Minnesota for the exterior, with a rough rock face on the ground floor and a smooth-cut stone above. The curving glass wall—constructed of clear-vision glass with a low-e coating on a series of deep shadow boxes backed with corrugated metal panels—orients the building westward toward the Moscow River and the Russian White House legislature building. A ceramic frit pattern on the glass helps the curving facade to constantly change its nature with shimmering light and shadow transformations. While a large portion of the facade is backed by metal panels for security and privacy, the wall achieves the overall desired illusion of transparency and openness.

A palette of warm-colored materials, including the same Vetter stone, Australian lace wood, ribbon-striped mahogany, and olive wood, was used for the interiors. Black absolute granite, both rough and smooth cut, was chosen for flooring in the public spaces to hide the grime and snow tracked in from the city. The ground floor includes a secure lobby and reception space, with corner alcoves for greeting visitors. A winter garden on the second floor, used for events and press conferences, overlooks a courtyard. A curving staircase with glass treads on perforated steel makes an elegant connection between public floors.

A formal, minimally landscaped forecourt, also designed by HOK, between the street gate and the chancery front door gives a processional quality to the entranceway and adds to its importance.

Open and free, or watchful?

HOK's own description of the chancery states that it "metaphorically conveys the freedom and openness of the United States." But the six-story glass wall, while certainly an unusual feature for Moscow, could also be perceived as America's "eye on Russia." Indeed, the new building offers a strikingly modern American presence in the Moscow skyline, but is it an appropriate architectural expression of freedom, democracy, and cooperation? The answer may vary for Americans and Muscovites. ■

WWW For more information on the people and products involved in this project, go to Projects at ***architecturalrecord.com.***

1994 The Clinton administration urges the same "top hat" solution that the Bush administration did. After years of intense debate, congressional approval for the Secure Chancery Facilities (SCF), nicknamed "top hat," is granted on October 6.

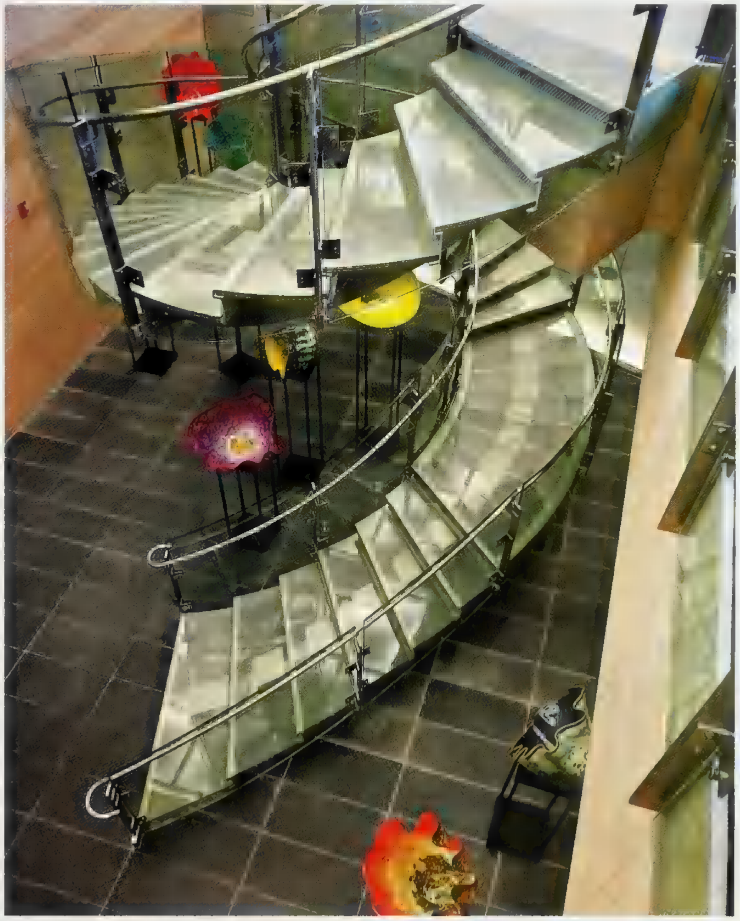
1995 Hellmuth, Obata + Kassabaum (HOK) is hired to design the SCF, which is to include demolition of the top two floors of the eight-story building, construction of four new floors, and transition of the fifth floor to the Controlled Access Area above.

1996 A contract is awarded to the joint venture firm Zachry, Parsons, Sundt for the partial deconstruction of the chancery, rehabilitation of portions of the building that remain standing, construction of the four new floors, and completion of all building systems.

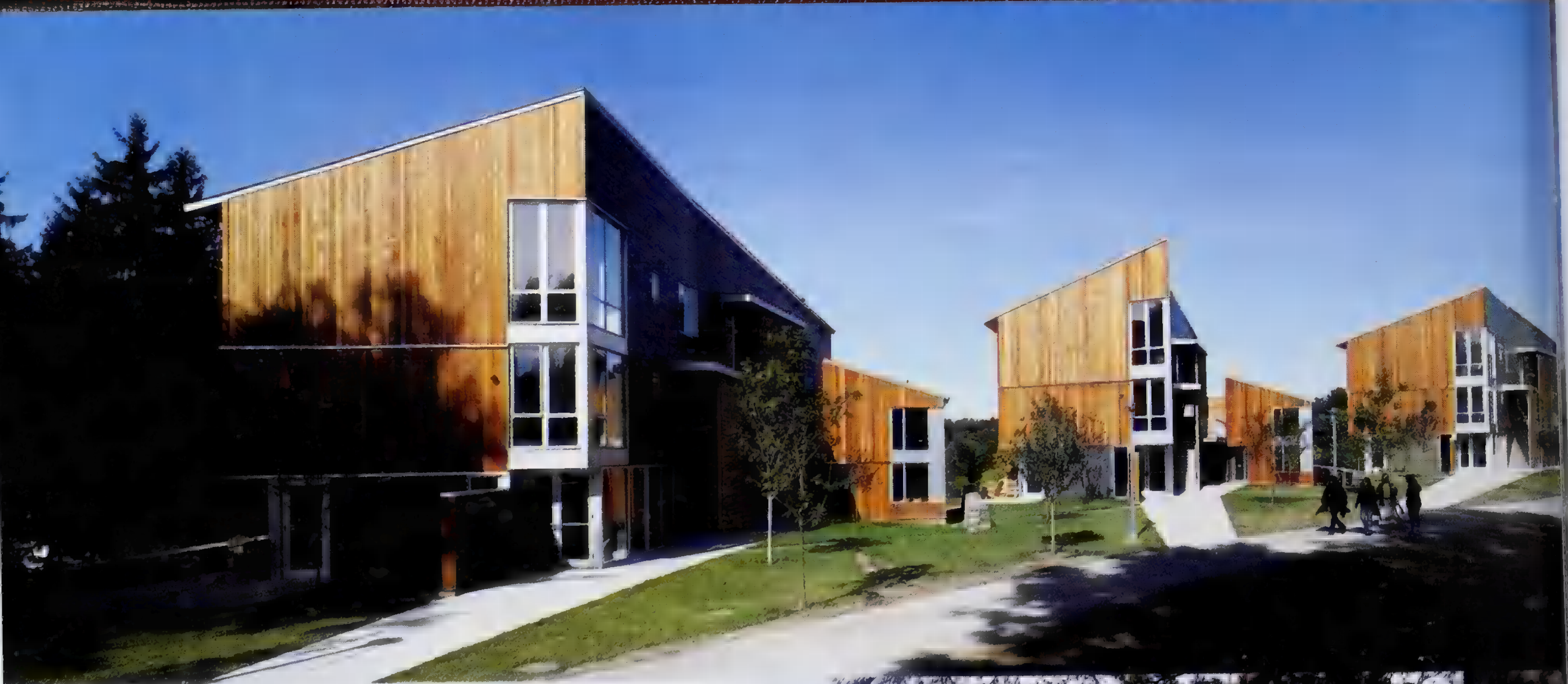
1997 Deconstruction begins in January and new construction starts in September with only non-Russian workers. The construction workers have their own cafeteria and medical clinic completely separate from the same facilities for the embassy employees.

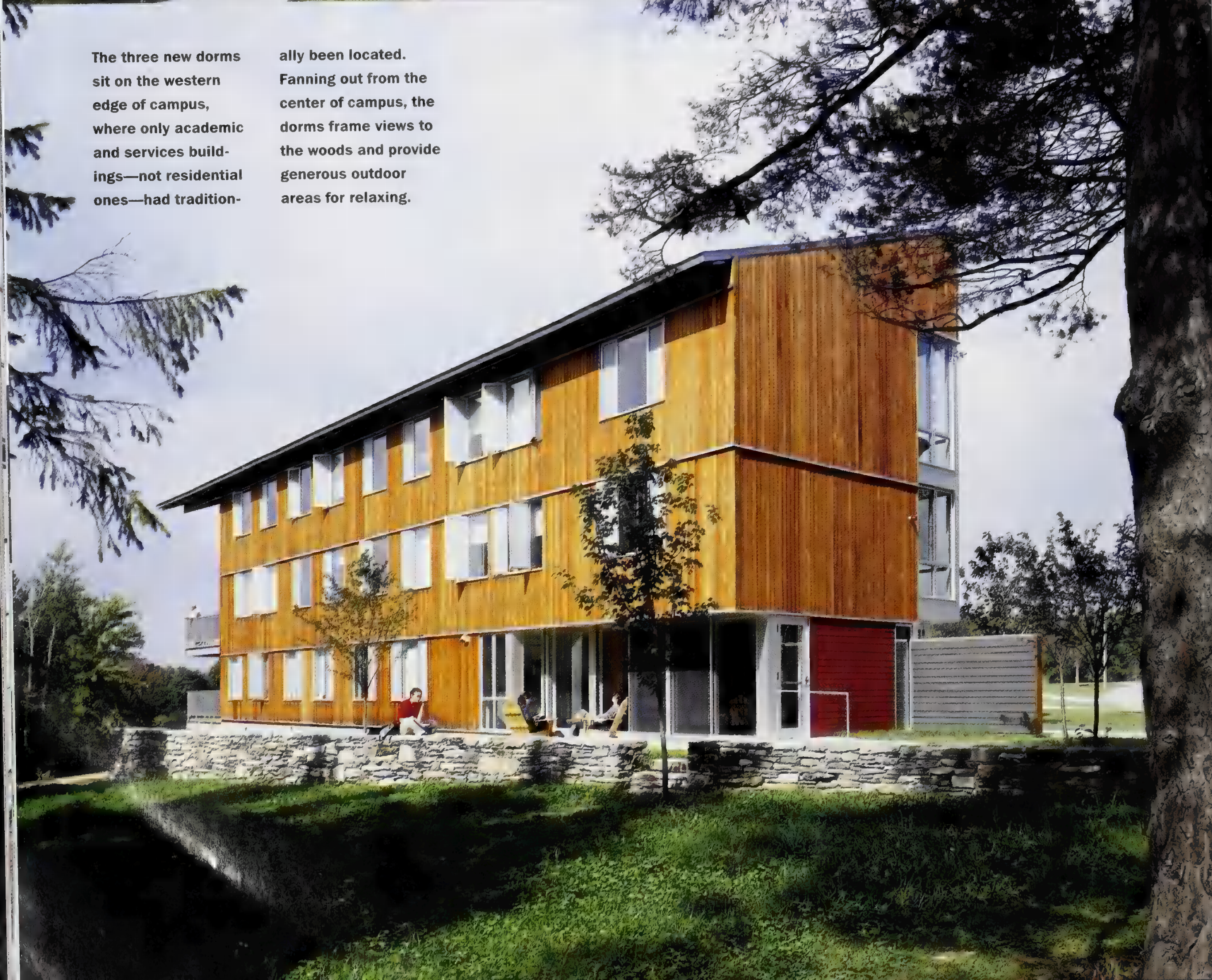
2000 The reconstructed U.S. Embassy Chancery opens in May.

Sources: The Washington Post; *Moscow Station, by Ronald Kessler; and interviews with HOK.*



A curving glass staircase and glass sculptures by Dale Chihuly (top) are welcome breaks from the chancery's formal rigidity. The warm colors of the elevator lobby walls (above) are in contrast to the black granite floor.





The three new dorms sit on the western edge of campus, where only academic and services buildings—not residential ones—had traditionally been located. Fanning out from the center of campus, the dorms frame views to the woods and provide generous outdoor areas for relaxing.

PHOTOGRAPHY: © TIMOTHY HURSLEY, EXCEPT AS NOTED

Kyu Sung **Woo** looks to the future without forsaking the past in the siting and design of his **BENNINGTON COLLEGE DORMS**

By David Dillon

Bennington College is a renowned northern outpost of the avant-garde, a former all-women's school where Martha Graham invented modern dance and Helen Frankenthaler produced her first color-saturated canvases. Yet even in those heady early days, the college combined innovation with tradition: no academic departments, but plenty of demanding courses in the humanities and sciences; edgy contemporary buildings by Pietro Belluschi and Edward Larrabee Barnes sitting next to serene white clapboard houses from the pages of *Vermont Life*.

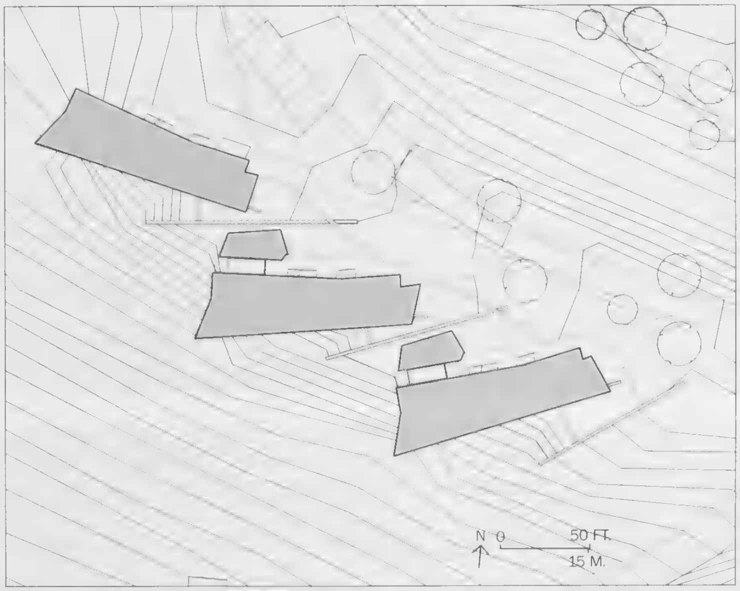
This blend of tradition and innovation continues in the college's new student housing, designed by the firm of Kyu Sung Woo Architect of Cambridge, Massachusetts. These three tapering rectangles, with their rolled roofs and radial lines, are unequivocally modern, yet also expressive of Bennington's famously collaborative culture. This is a place where everyone has an opinion and is happy to express it more than once. "Just like Israeli politics," says President Liz Coleman.

Woo spent days asking students what they liked and disliked about the original 1930s dormitories on the south lawn, then found ways to accommodate most of their wishes: living rooms, fireplaces, a small kitchen, study nooks, staircases with landings, easy access to the outdoors, a choice of singles, doubles, and suites, even attached faculty apartments.

"Kyu Sung was able to take the incredible range of viewpoints here and use it productively," says vice president Joan Goodrich, who supervised the project for the college. "When some of our purple-haired students demanded traditional New England village architecture, he convinced them that it was more important to do something for the 1990s."

The three new houses, each for 35 students, are perched on the western edge of the campus, close to the commons and the post office but also looking out on the woods and meadows that are among the school's greatest assets. Each contains a living room with kitchen and fireplace on the first floor and study alcoves and common spaces above, including several with dramatic spiral staircases. All corridors are single-loaded to enhance views of the landscape, and each has a slight bend in the center to mitigate the orthogonal sterility of the typical college dormitory. At the ends are large picture windows that flood the interior with light even on cloudy days.

Contributing editor David Dillon is the architecture critic for The Dallas Morning News *and is working on a book about American places.*



Woo wanted to use corrugated metal siding, but when state regulators claimed "vernacular outrage," he switched to red cedar clapboards, which he attached vertically as well as horizontally to enrich the facade and catch the subtle Vermont light. He also used cedar louvers to screen the exterior staircases, another popular feature of the old houses.

When the Bennington students saw Woo's first model, they revolted. Too slick, too contemporary, too institutional, they shouted. But by the time the houses opened last September, the criticism had subsided, and now they are among the most popular in the housing lottery. "The stigma attached to living in a new building is gone," says one student. "The spaces are congenial and the light is beautiful."

The success of the new houses has as much to do with siting as with architecture. The college wanted to locate them on the revered south lawn, next to the 1930s wood-frame dorms, where they would have

Project: *Bennington College Houses, Bennington, Vermont*

Architect: *Kyu Sung Woo Architect—Kyu Sung Woo, FAIA, principal in charge; Timothy Downing, AIA, project architect; Elizabeth Kostojohn, job captain; Charlie Choi, Motomu Nakasugi, Ryan Dunn, design team*

Engineers: *Lim Consultants (structural); C.A. Crowley Engineering (mechanical/electrical/plumbing); McPhail Associates (geotechnical); Enman Engineering (civil)*

Consultants: *Reed Hilderbrand (landscape); Berg Howland (lighting); Mia Moon (color)*

General contractor: *Barr and Barr*

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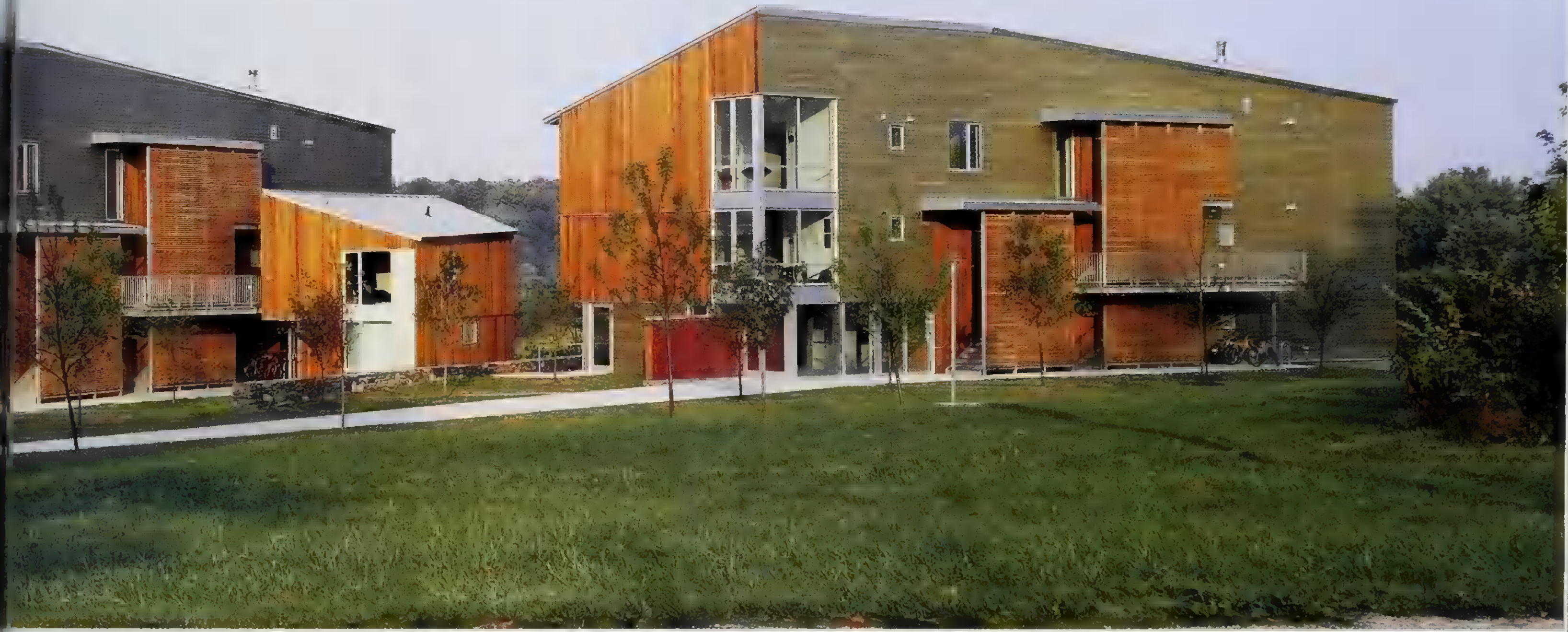
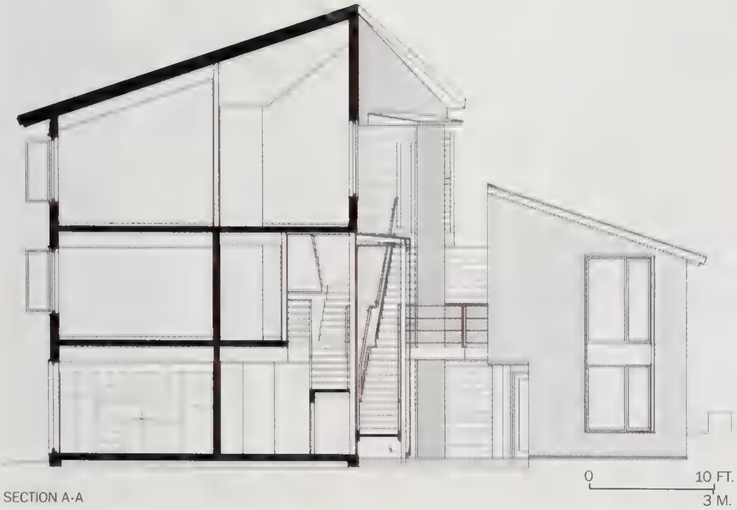


Although the program originally called for one building, Woo convinced the client to break it down into three structures. Housing 35 students instead of about 100, each of the new dorms can establish a greater sense of community while also maintaining the proper scale for a New England liberal arts college campus (above). In conversations with students, the architect learned of their strong attachment to many elements found in the old dorms on campus: fireplaces, faculty apartments, and outdoor spaces where students can socialize or read. While designing modern buildings, Woo incorporated these elements and dressed the dorms in a combination of anodized aluminum panels, horizontal shiplap red cedar, and vertical tongue-and-groove red cedar.



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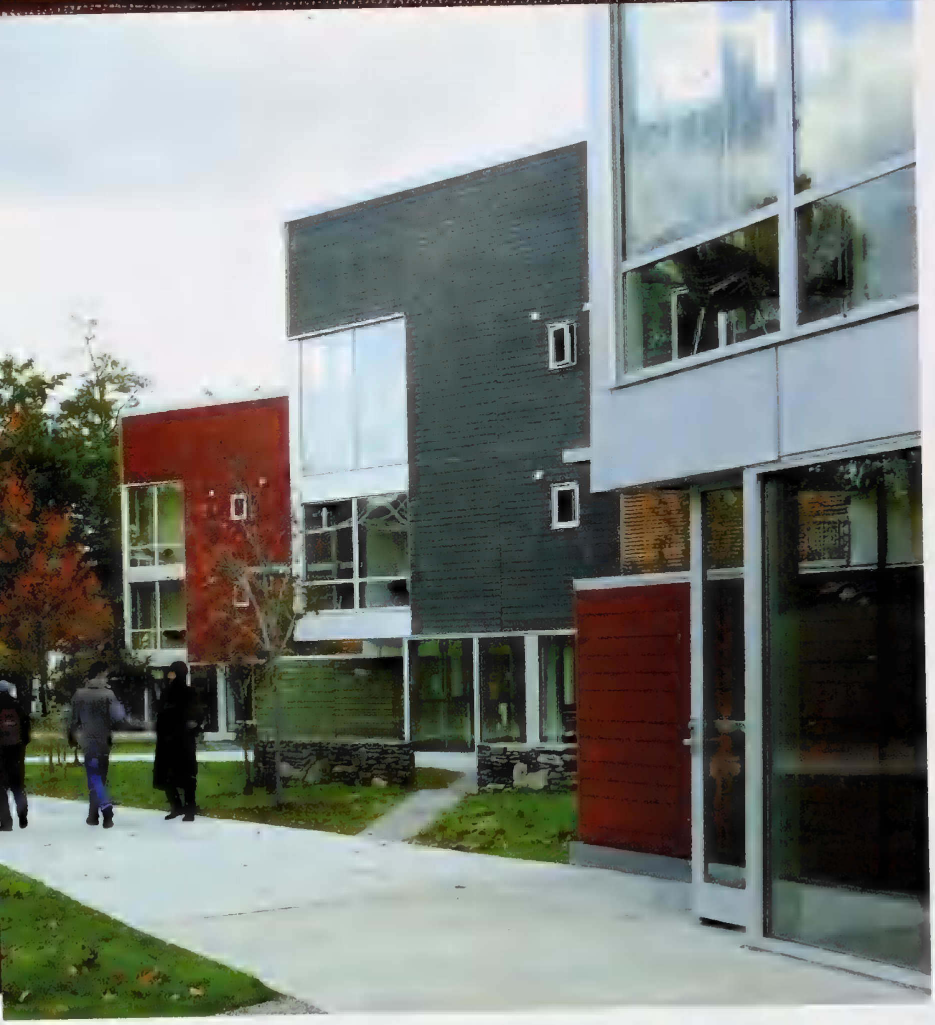
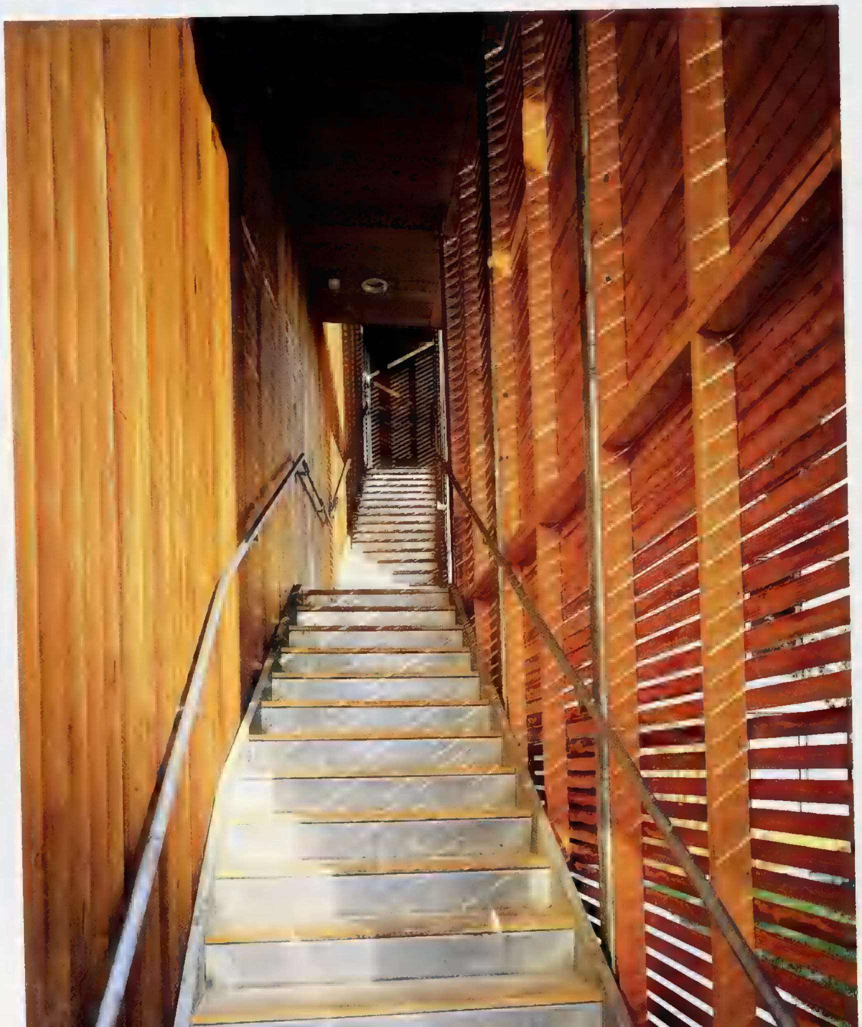
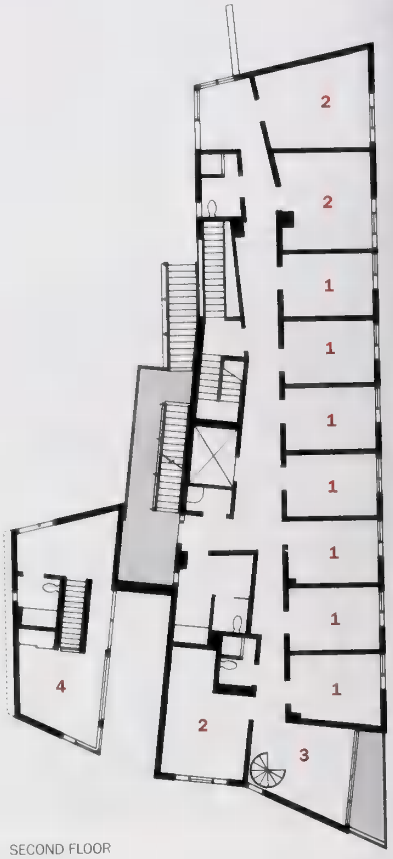


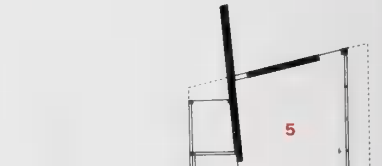


The dorms offer a variety of living accommodations, including single rooms, doubles, and suites, as well as shared spaces such as living rooms with fireplaces, kitchenettes, and common rooms (plans, right and below). Screened outdoor staircases (below) help animate facades and offer landings with views of the lawns.



SECOND FLOOR

1. *Single*
2. *Double*
3. *Common room*
4. *Faculty apartment*
5. *Living room*



GROUND FLOOR

Each of the dorms has a variety of shared spaces on different levels, and most of these have access to outdoor space—whether a deck, a patio, or a balcony. The architect designed the buildings with single-loaded corridors and generously glazed common areas to take advantage of beautiful views.

PHOTOGRAPHY: © WAYNE FUJII (THIS PAGE, BOTTOM AND

completed a vaguely Jeffersonian composition. A competing firm even proposed an underground building at the far end of the lawn, on what students refer to as the "end of the world," but that struck even Bennington as too radical.

Woo persuaded the administration that while the south lawn location would complete an existing plan, it opened up nothing new. What about the future? he asked. Instead of continuing to segregate academic and residential buildings, why not put them together to create a richer mix and a new focus. "We felt that everyone loved the old buildings and the old plan a bit too much," he says.

Not only did Woo get a new site, he got permission to design three small buildings instead of one large one, a major concession for a small school such as Bennington with a tight budget. Their radial lines fan out toward the commons and the center of campus, and back to the woods and fields, visually linking nature and nurture, the work of the head and the heart. And by turning the tapered ends of the houses toward campus, and maintaining generous views between them, Woo managed to create a screen instead of a wall. The new houses make a crisp, clear edge while offering glimpses of other things far off in the distance. Very Bennington. ■

Sources

Curtain wall: *Clear anodized aluminum panels (field fabricated)*
Shiplap wood: *Western red cedar*
Sliding doors: *Efco*
Custom color stain: *Cabot Stains*
Entry stone flooring: *Vermont Slate*
Resilient flooring (living room): *Armstrong*
Carpet: *Lees*
Interior ambient lighting: *Elliptipar*

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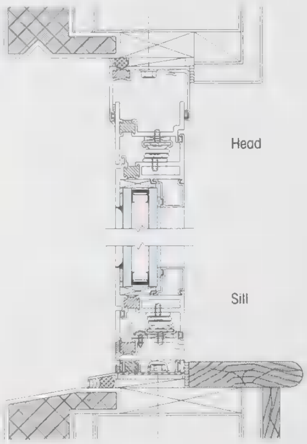

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K-12 SCHOOLS

Good Neighbors

AS GREEN BUILDINGS RISE IN PRESTIGE AND PICK UP MOMENTUM, ONE WAY TO MAKE SCHOOLS SUSTAINABLE IS TO MELD THEM INTO THE LOCAL FABRIC.

By Deborah Snoonian, P.E.

According to F.W. Dodge estimates, $30 billion will be spent annually on K-12 school construction through 2004, an apparently recession-proof budget that outpaces other building types. At the same time, green building continues to garner widespread support, with many communities adopting environmental guidelines for new construction. The No Child Left Behind Act, which passed in January, earmarks $550 million annually for a new program to improve the energy efficiency of school buildings and to promote healthy environments within schools. At "Learning Environments that Sustain," a conference held in New York last fall that was sponsored by AIA's Committee on Architecture and Education (CAE) and Committee on the Environment, designers and school officials gathered to discuss ways to rectify K-12 educational aims with environmental protection goals and community needs. "Designers are very interested in creating learning environments that are flexible enough to be used for a long period of time, and with environmental features students can learn from," says Pam Loeffelman, AIA, chair of CAE and principal of Hardy Holzman Pfeiffer Associates.

Few K-12 schools that fully incorporate green features as design elements and educational tools have been built so far—the Roy Lee Walker Elementary School in McKinney, Texas, designed by SHW Group of Dallas, is one example. But elements of sustainable design have appeared in new schools for the past few years. What distinguishes the projects on the following pages is not an overt expression of greenness as measured by amount of daylighting or recycled material used—although some do have these characteristics. Instead, their neighborliness makes them stand out. The designers of these schools faced formidable challenges posed by site conditions and local contexts, resolving these challenges and meeting programmatic requirements with flair. Such intelligent balancing of competing needs is inherently sustainable. A building that functions well in its setting—aesthetically and programmatically—is one that will likely persist over time as well as in memory. It's Darwinism for architecture: survival of the fittest, or rather, the most fitting.

School boards are increasingly willing to take on sustainability. "Both teachers and parents are beginning to demand green building features," says Judy Marks, Hon. AIA, associate director of the National Clearinghouse for Educational Facilities, which tracks building trends in education. A school's degree of sustainability will one day become a status symbol—in the same way schools claim bragging rights for large libraries, winning sports teams, or kids who get accepted to Ivy League colleges. ■

1.

New Haven

Michael Haverland and the Yale Urban Design Workshop spruce up an elementary school with a colorful addition of brick, glass, and metal.

2.

San Francisco

SMWM replaces a makeshift high school campus with a contemporary, light-filled building in an eclectic residential neighborhood.

3.

Carolina, Puerto Rico

Davis, Fuster Arquitectos knits together an arts school campus with beckoning new buildings that invite exploration and discovery.

4.

New York City

ABA Studio/Andrew Bartle Architects transforms a 19th-century row house into a homelike environment for children with special needs.

www For additional K-12 projects, go to Building Types Study at ***architecturalrecord.com***. The monthly expanded Web BTS features project descriptions, photographs, drawings, statistics, and links to people and products.

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Timothy Dwight Elementary School

New Haven, Connecticut

1

MICHAEL HAVERLAND AND THE YALE URBAN DESIGN WORKSHOP ENHANCE A NEIGHBORHOOD SCHOOL WITH A MULTIPURPOSE ADDITION.

By William Weathersby, Jr.

Architect: *Michael Haverland Architect/Yale Urban Design Workshop—Michael Haverland, AIA, designer and project architect; Paul Arougheti, Ben deRubertis, Al Dasher, Dominique Davison, Marcos Diaz-Gonzalez, Thomas Dunn, Joe Fong, Billy Forrest, Mark Gage, Kristina Lamour, Jen Lau, Michael Lee Poy, Tom Morbitzer, Kieran Trihey, Paul Whittaker, Jim Woodworth, Belinda Young, Yale Urban Design Workshop students*
Client: *City of New Haven, New Haven Board of Education*
Engineer: *Salamone Associates*
Consultants: *Balmori Associates (landscape); Thomas Dunn/Paul Whitaker, Yale School of Drama (lighting); Kristina Lamour, Yale School of Art (graphic design)*
General contractor: *A. Prete Construction*

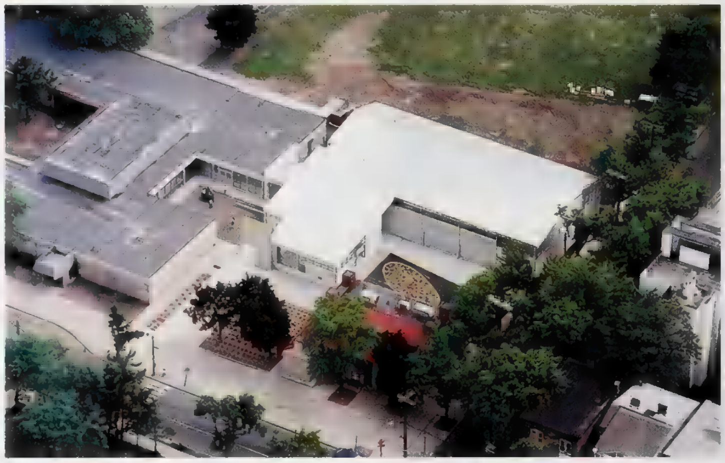
Size: *9,300 square feet; 500 students*
Cost: *$2.07 million (construction)*
Completion date: *May 2001*

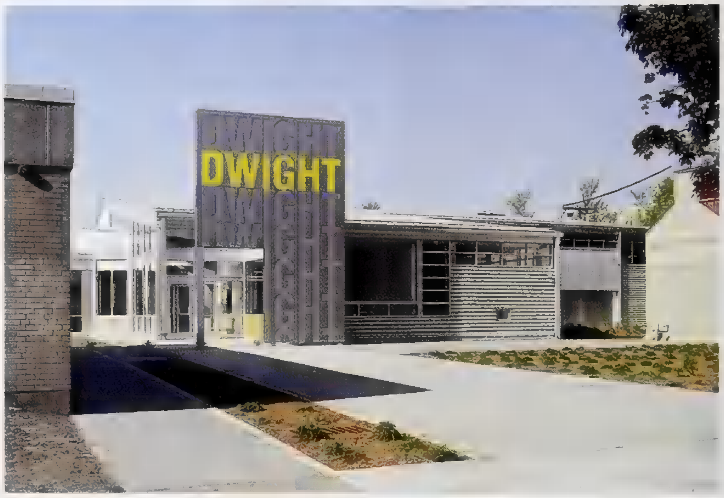
Sources
Green glazed brick: *Elgin-Butler*
White split-faced brick: *Alba Stone Products*
Corrugated metal: *Reynolds Corporation/RAC*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

Program

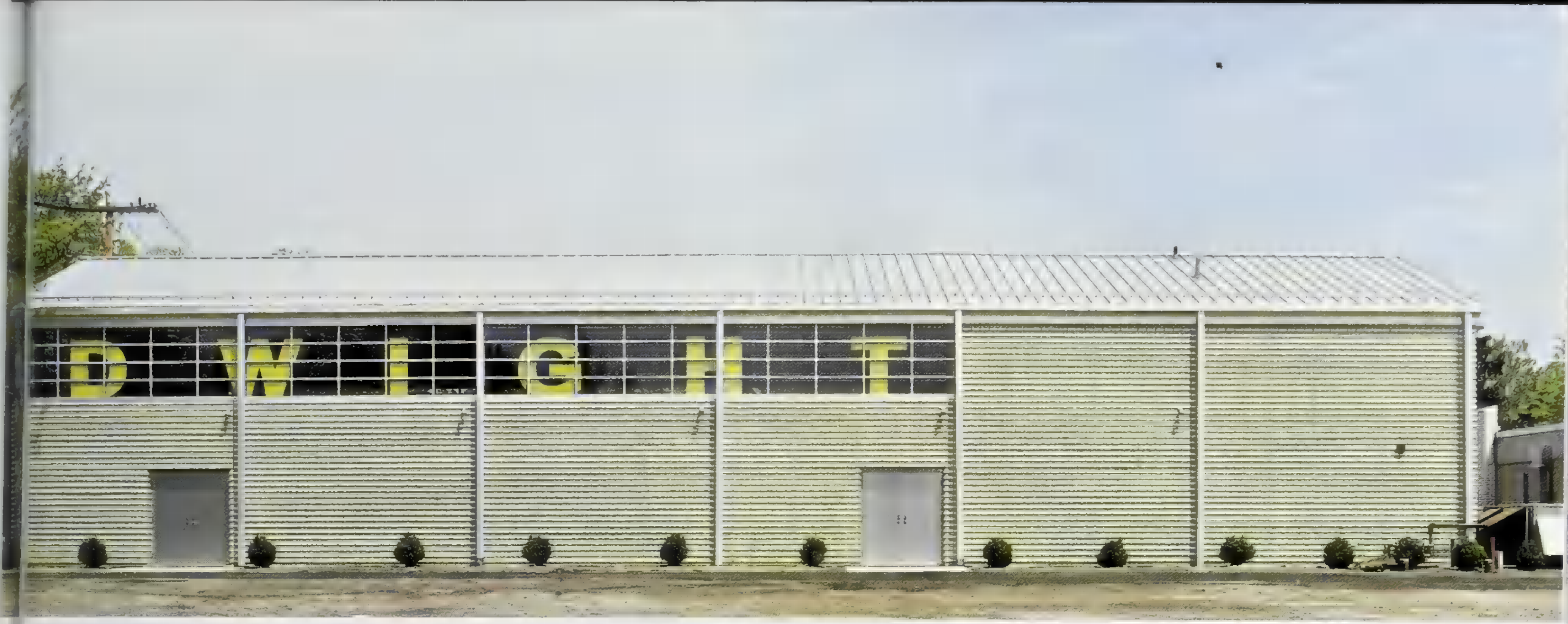
Four blocks from campus, students from Yale University have learned lessons in the real world of planning and design for elementary education. Collaborating with community groups and the local government, the Yale Urban Design Workshop (UDW) enhanced the Timothy Dwight Elementary School with a 9,300-square-foot, multipurpose addition. An eight-year-old organization that grew out of a design studio, the UDW brings together faculty and students from the School of Architecture and Yale's other professional schools to provide planning and design services for communities in Connecticut. Although the forum does not typically engage in construction projects, in this case federal, state, and local grants allowed this leap forward. "The Dwight School project is a model of how students can play an active role in community planning," says Michael Haverland, AIA, Yale assistant professor and UDW codirector, who was the project's principal designer, aided by 17 Yale students from various disciplines. "Students learned to navigate the intricacies of community coalitions and tight budget constraints."



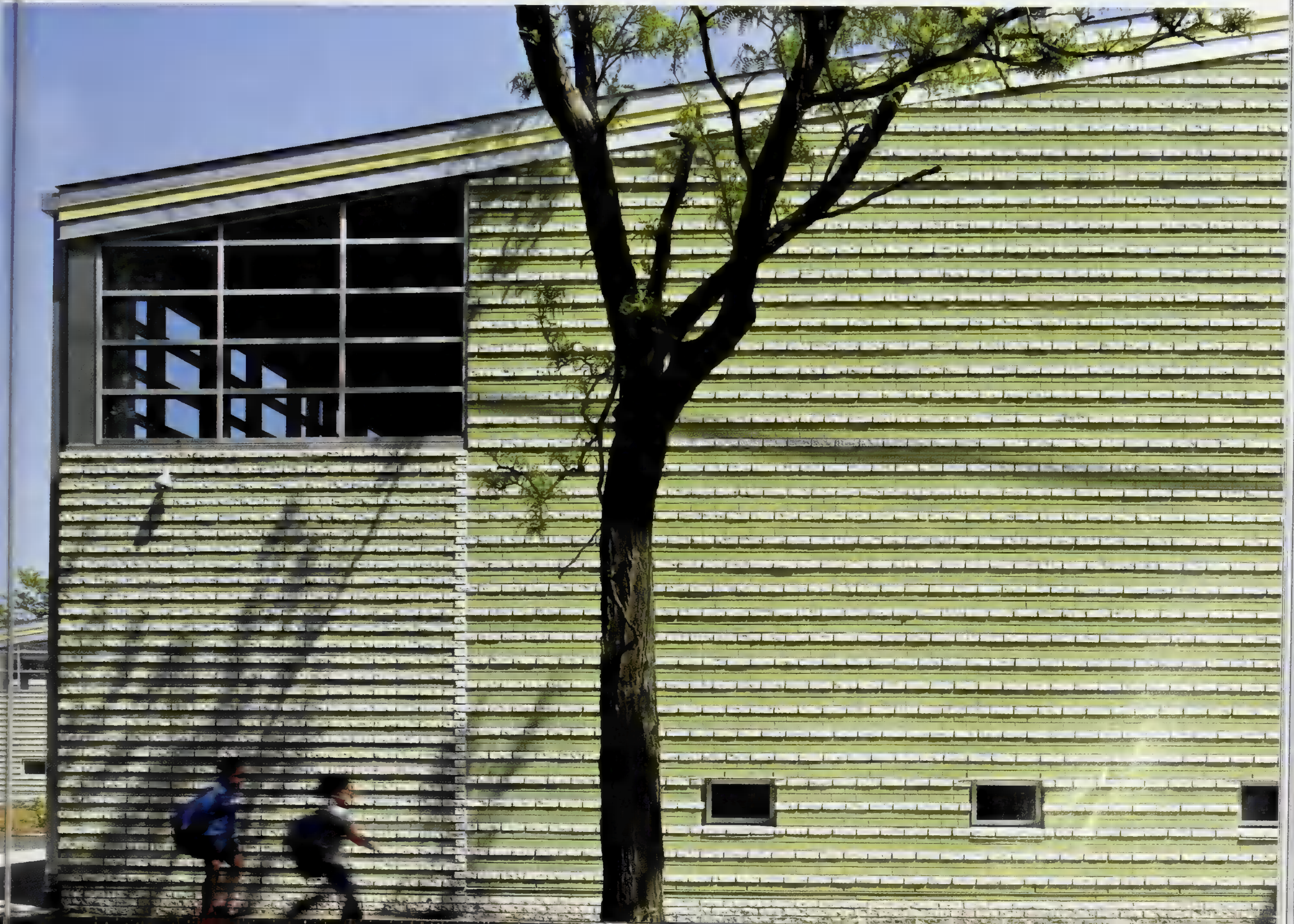


PHOTOGRAPHY: © ALEX C. MACLEAN (AERIAL, THIS PAGE, TOP); ANDREW BORDWIN (ALL OTHERS)

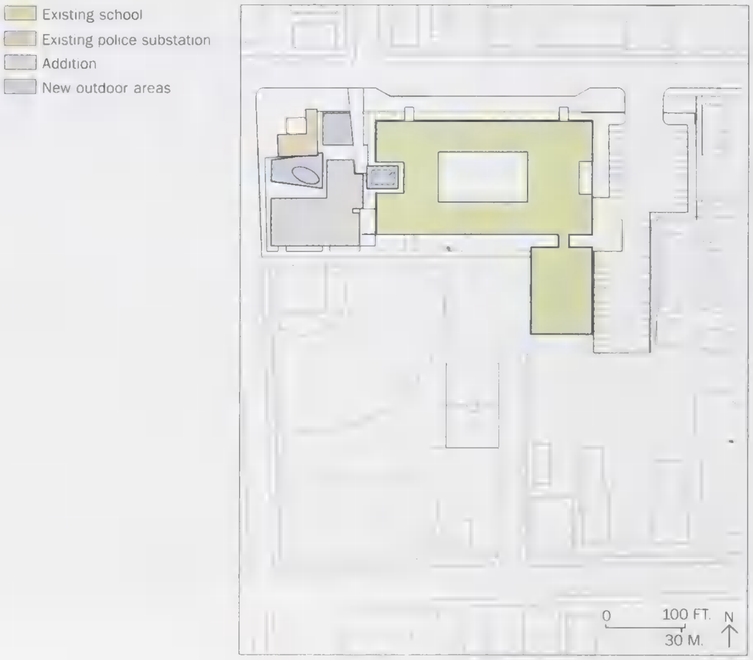
The project was launched as a three-day community design charrette in 1995. With more than 300 participants including the mayor, civic officials, and local residents, the sessions targeted expansion of the school on Edgewood Avenue. Designed by Eliot Noyes in 1963, the single-story, 38,000-square-foot school is situated within a low-income neighborhood and lacked an indoor recreation space or assembly hall. Its classrooms have no windows. A program was developed for a multipurpose room to accommodate its 500 students while also serving as a community meeting place. A $2.4 million grant from the Department of Housing and Urban Development was awarded to Yale to develop the plan. Remaining funds were allocated by the State of Connecticut and the New Haven Board of Education.

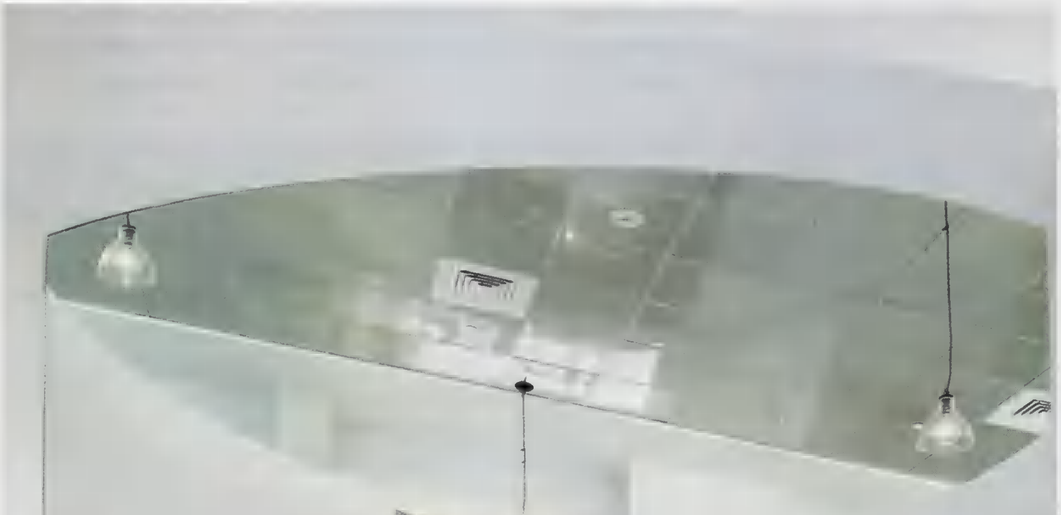


The standing-seam aluminum-roofed addition extends the school's role as a community activities center, announcing itself with bold signage (opposite). The white split-faced brick relates to the precast concrete of the existing school, while alternating runs of green glazed brick introduce color and texture (above and below). Clerestories light the multipurpose space and project the school's identity to the neighborhood.



The elliptical foyer connects the addition to the classroom wing and provides a new entry point for the community (below). One of two office/meeting rooms required by the community (opposite, top). The addition frames a new playground for kindergarteners, well within view from indoors (opposite, below).





Solution

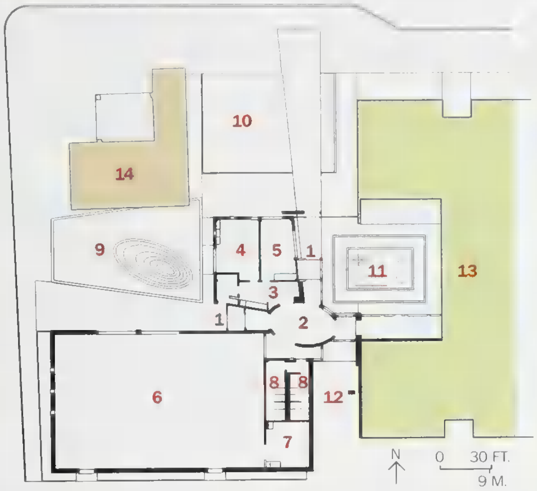
With maintenance and security as priorities, client mandates developed through the charrette included no flat roofs, no porches where the homeless could gather at night, the use of durable, vandal-resistant materials, and more natural light.

Rising at the west end of the school, the L-shaped addition creates a new, prominent entry axis. A supergraphic billboard announces the school's presence to the neighborhood. The short leg of the building's footprint runs perpendicular to two wings of the school to frame three outdoor spaces that pinwheel around it: a small playground, a formal entrance garden, and a flexible courtyard. A double-height, elliptical lobby serves as a pivot point between a classroom wing, the multipurpose room, and two office/meeting rooms earmarked for community organizations.

The 57-by-90-foot multipurpose room functions as a gymnasium and auditorium. Roll-out basketball goals, a folding stage platform, and stacking chairs can all be stored, and the room opens onto both the public courtyard and playing field.

Commentary

The Dwight expansion displays a creative exploration of materials and budgetary ingenuity. To counterbalance the dull concrete and beige brick cladding of the existing structure while relating to its masonry construction, alternating courses of green glazed brick and white split-faced brick clad the addition, interspersed with sections of corrugated metal. A dropped ceiling in the lobby is stripped to its perforated aluminum surface and dramatically uplit. Standard fire-rated doors in the multipurpose room were installed upside down so children could see through the windows, and small windows punched through the base of the walls also allow child-size views. Filled with light and reconnected to the community, the vibrant addition makes the Dwight's classrooms pale in comparison. They seem ripe for a redesign. ■



1. *Entry*
2. *Lobby*
3. *Security*
4. *Office/meeting room*
5. *Classroom*
6. *Multipurpose room*
7. *Storage*
8. *Rest room*
9. *Courtyard*
10. *Garden*
11. *Outdoor play area*
12. *Service area*
13. *Existing school*
14. *Police station*

Drew College Preparatory School

San Francisco

2

SMWM REPLACES A HODGEPODGE PRIVATE-SCHOOL CAMPUS WITH AN ELEGANT NEW BUILDING IN A DISTINCTLY URBAN SETTING.

By Lisa Findley

Architect: *SMWM—Cathy Simon, FAIA, principal in charge; Liza Pannozzo, AIA, project architect; John Long, AIA, project manager; Barbara Shands, designer; Diane Lam, interior designer; Tim Potter, job captain; James Koentopp, AIA, construction contract administrator*
Client: *Drew College Preparatory School*
Engineers: *OLMM (structural); Sandis Humber Jones (civil); Guttman & Blaevoet (plumbing)*
Consultants: *CTLK (landscape); Architectural Lighting Design (lighting); Charles Salter & Associates (acoustical)*
General contractor: *Herrero Brothers*
Size: *35,000 square feet; 210 students*
Cost: *$7.75 million*
Completion date: *September 2001*

Sources
Masonry: *Muddox; Inland Masonry*
Metal/glass curtain wall: *U.S. Aluminum; Progress Glass*
Concrete: *TSM Construction*
Limestone: *Solnhoffen*
Cement plaster: *RFJ Meiswinkel*
Built-up roofing: *Johns Manville*
Tile/shingles: *DynaKap*
Acoustical ceilings: *USG*
Interior ambient lighting: *Lightolier*

WWW For more information about the people and projects involved in this project, go to Building Types Study at **architecturalrecord.com**.

Program

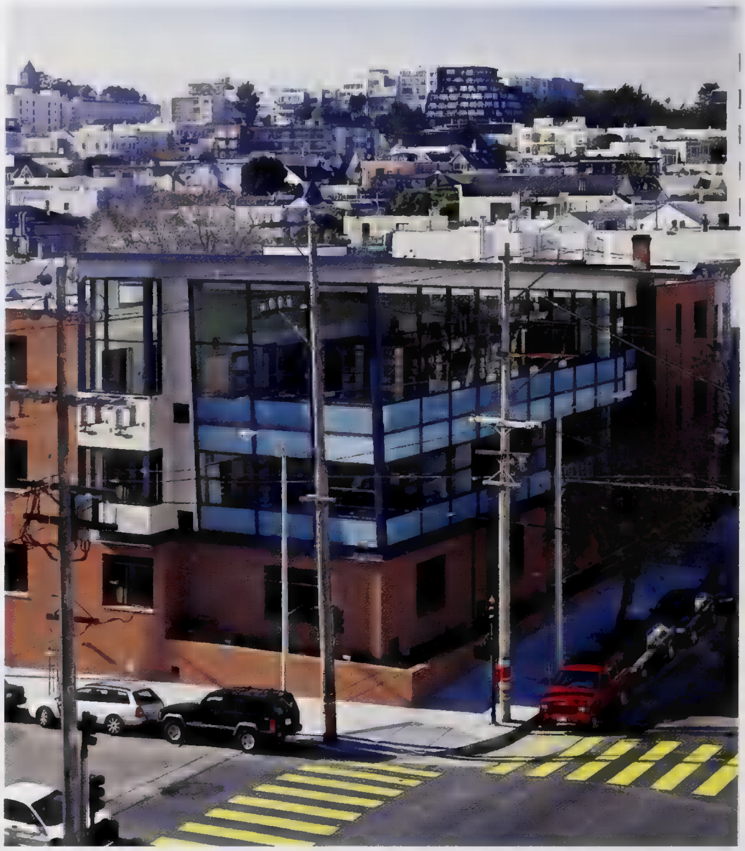
Since 1908, the Drew School, a private high school in San Francisco, occupied a Victorian house and a motel-like addition wedged onto a corner residential lot. Ten years ago, an energetic new head, Samuel Cuddeback, arrived who expanded enrollment and elevated the quality of the programs. Soon, the deteriorating, makeshift campus was more than an inconvenience—its lack of proper teaching facilities became an obstacle to recruiting the high-quality students the school aspired to attract. In 1998, Drew began fund-raising for a new building on the site of the old structures. Designed by SMWM of San Francisco, the project went into construction in May 2000. While it was being built, the 210 students relocated for a year to the Calvary Stables at the decommissioned army base at San Francisco's Presidio. Dubbed "Camp Drew," the school took advantage of the natural and historical setting for special class sessions. It moved into its new building in 2001.

Solution

Fitting the new school onto a tight 15,000-square-foot site while leaving room for a possible future expansion was the kind of challenge SMWM had faced before when designing urban schools. The new building is a 20,000-square-foot, three-story, L-shaped structure stacked on top of a 15,000-square-foot concrete parking podium, with a courtyard in the L. Its small, seminar-style classrooms have flexible seating that can be rearranged for group learning or individual study. The building also has state-of-the-art science labs, an appropriately messy art room, support spaces, and a lecture hall. These features are topped by a double-height, light-filled corner library.

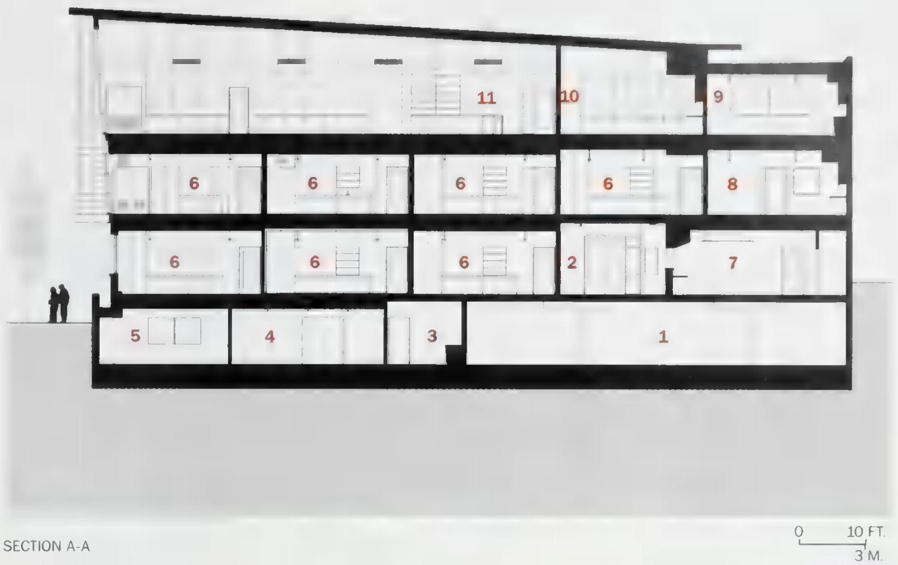
SMWM's efficient design makes the small school seem roomy. An opening to the courtyard placed two thirds of the way into the long leg of the L shortens circulation pathways. Locker-lined hallways are filled with daylight, and generous benches occupy corners and niches for that critical teenage activity—socializing.

The design was also guided by the character of the neighborhood, a mix of Victorian-era single-family houses and several styles of multi-

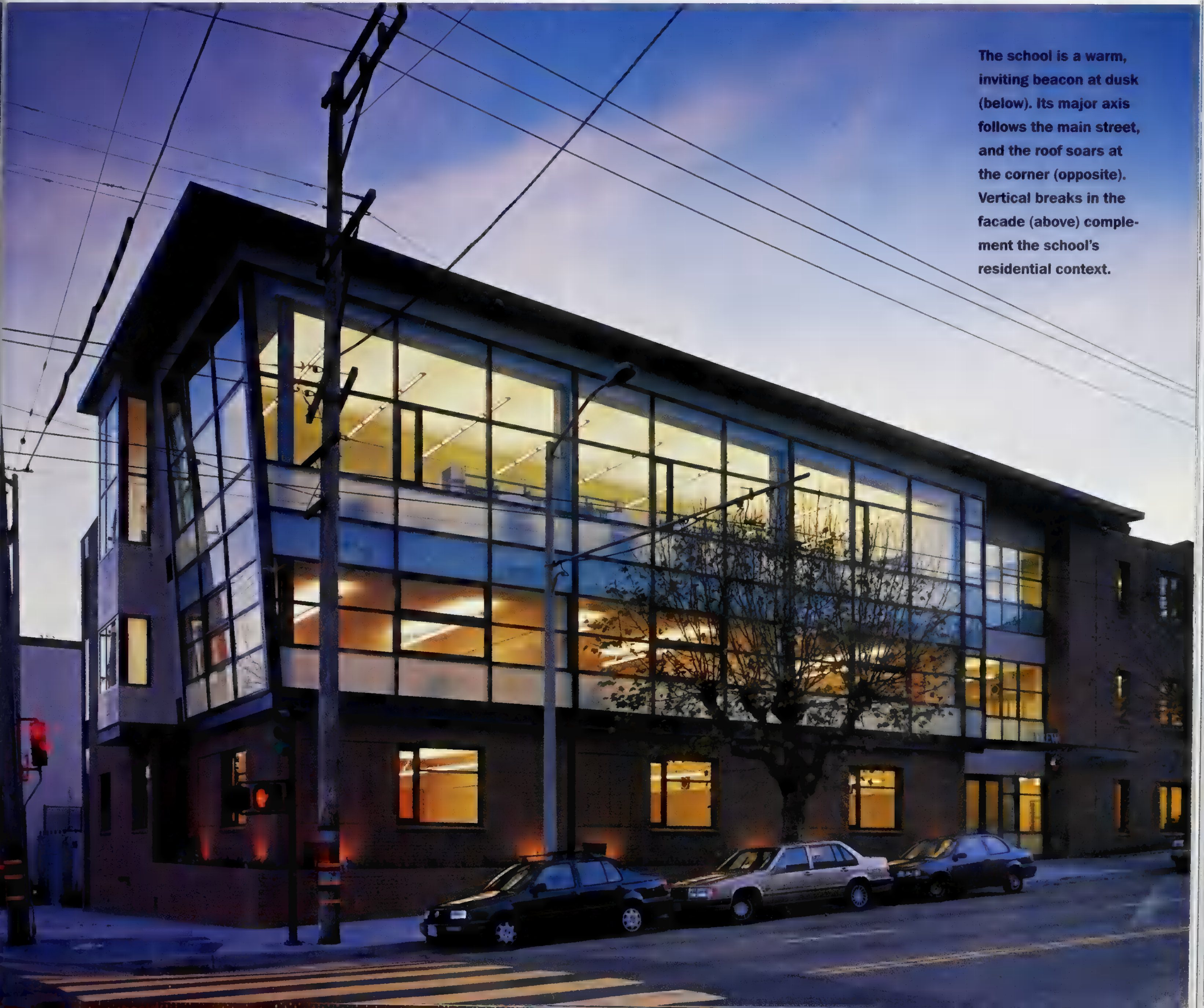


PHOTOGRAPHY: © ETHAN KAPLAN

1. *Parking garage*
2. *Entry*
3. *Photo lab*
4. *Fitness lab*
5. *Music studio*
6. *Classroom*
7. *Office*
8. *Learning resource area*
9. *Art studio*
10. *Computer lab*
11. *Library*



SECTION A-A

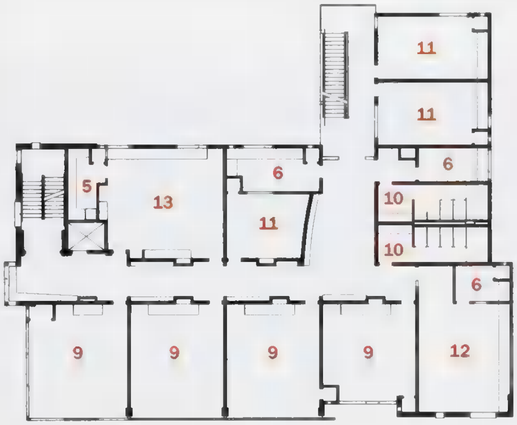


The school is a warm, inviting beacon at dusk (below). Its major axis follows the main street, and the roof soars at the corner (opposite). Vertical breaks in the facade (above) complement the school's residential context.

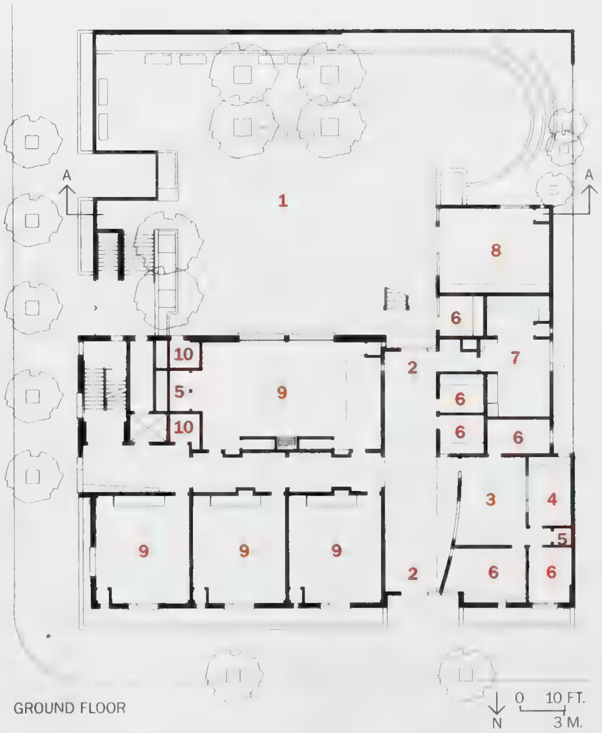
Studying in the Drew School's light-filled library (top), which overlooks the street corner, is a pleasant way to pass time between classes.

Recyclable carpeting in the locker-lined hallways (bottom) helps keep noise down, while generous windows allow plenty of daylight in.

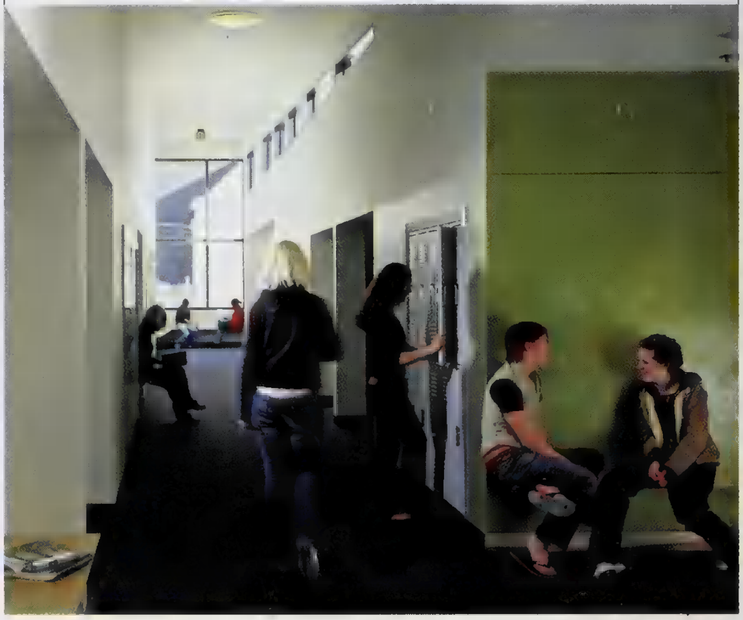
1. *Courtyard*
2. *Entry*
3. *Reception*
4. *Conference room*
5. *Storage*
6. *Office*
7. *Faculty/staff lounge*
8. *Student lounge*
9. *Classroom*
10. *Rest room*
11. *Seminar room*
12. *Learning resource area*
13. *Science lab*



SECOND FLOOR



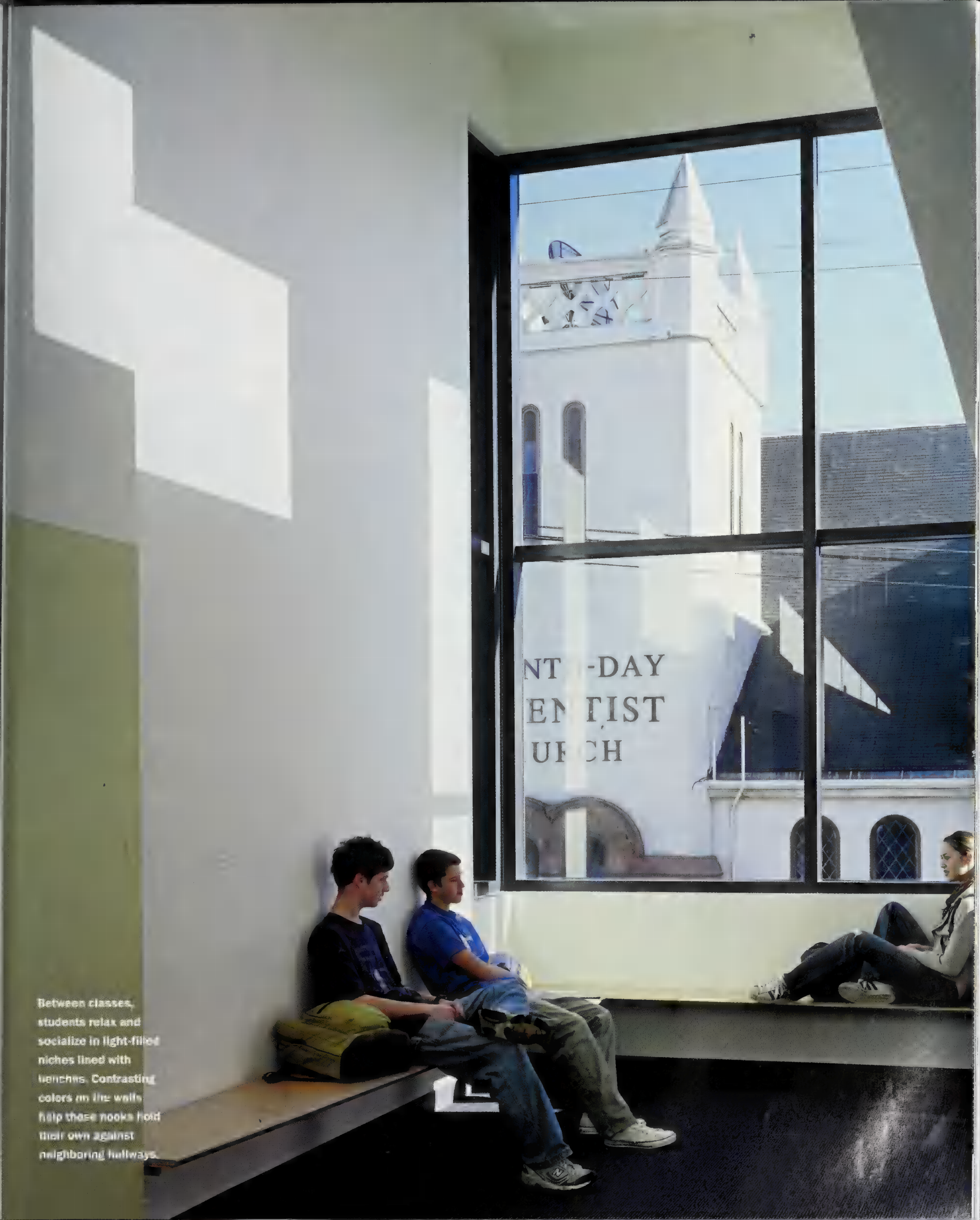
GROUND FLOOR



family buildings. A handsome 1890s church occupies a corner across the street. The only source of visual continuity is the use of brick in several facades. SMWM used the long leg of the L to hold the edge of the major street, and mediated the mix of adjacent buildings by introducing subtly vertical breaks in the facade to acknowledge the rhythms of the residential pattern. Brick provides a visual base and anchor for the building; at the same time, the architect introduced contemporary materials—glass, steel, and concrete—and lifted the roof at the corner so that it soars above the street and gives the building an institutional scale.

Commentary

School head Samuel Cuddeback is enthusiastic about the project. "This building was an instant source of pride. It has changed our perceptions of ourselves and prompted higher-quality teaching and higher self-expectations from our students," he says. Indeed, replacing the hodgepodge of ill-matched existing structures with a single contemporary building gave the Drew School a renewed presence in the neighborhood. The major elevation, prominent on California Street, answers the slope of the street with the rising roof at the corner nodding both to the church across the way and to the city down the hill. Within the school, teenagers have a lively, daylit environment skillfully designed to allow space for casual interaction within the framework of daily classes, and a gracious outdoor courtyard for sun, circulation, and socializing. ■



Between classes, students relax and socialize in light-filled niches lined with benches. Contrasting colors on the walls help these nooks hold their own against neighboring hallways.

Carolina Fine Arts School

Carolina, Puerto Rico

3

DAVIS, FUSTER ARQUITECTOS BUILT AN ARTS SCHOOL AS A DREAMLIKE SEQUENCE OF LIGHT-DAPPLED LOGGIAS AND SUN-DRENCHED COURTYARDS.

By James S. Russell, AIA

Architect: *Davis, Fuster Arquitectos—J.R. Coleman-Davis Pagán, AIA, and Nataniel Fuster-Felix, principals in charge; J.R. Coleman-Davis Pagán, AIA, Nataniel Fuster-Felix, Edgardo Ocasio-Roig, Carlos Negron-Roche, Ramón Morales, project team*
Client: *Municipality of Carolina, Hon. José E. Aponte-De la Torre, Mayor*
Engineers: *Molina, Garcia & Asociados (structural); EBP Design Group (civil/site); Rafaél Arnaral & Asociados (electrical/mechanical)*
Consultants: *Peter Albrecht Co. (theater systems and acoustics)*
General contractor: *Three 0 Construction*

Size: *63,000 square feet; 900 students*
Cost: *$10 million*
Completion date: *December 1999*

Sources
Cast-in-place concrete: *Concrete Mixto*
Wood doors: *Lausell Commercial*
Glass jalousies: *Lausell Aluminum Jalousies*
Skylights: *Rico Plastics*
Glass block: *Pittsburgh Corning*
Brick: *Belden Brick*
Terra-cotta tile: *Cerámica Mayor*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

Program

Nataniel Fuster and J.R. Davis have long admired the gutsy tropical modernism that flowered around the Caribbean in the two decades after World War II. The deep facade incisions, the sunscreens and courtyards of that time expressively cut the powerful sun and drew in the cooling trade winds. The San Juan, Puerto Rico, firm inventively deploys the devices popularized by such legendary practitioners as Oscar Niemeyer and local masters like Toro Ferrer. In the case of the Carolina Fine Arts School, near San Juan, these aesthetic influences offered an expedient way to resolve an intricate program and a challenging setting, which presented less-than-ideal raw material. The architects had to overhaul and reinvent an existing campus, dotted with three buildings dating from 1928 to the 1960s that accommodated a school specializing in music education only. Carolina's mayor José E. Aponte-De la Torre asked the architect to rework the school to handle a much broader range of arts, including dance and the plastic arts, as well as music.

The existing buildings had to be retained, however, and not just for budget reasons. The school needed to stay in use continuously as new structures were erected on the site. The complex program for some 900 students as young as seven and as old as 18 included a 500-seat auditorium; a variety of music practice rooms; studios for painting, sculpture, and printmaking; and studios for dance, along with the expected variety of support spaces. The school authorities also asked the architects to create distinct identities for each discipline in their design, while providing places for everyone to mingle.

Solution

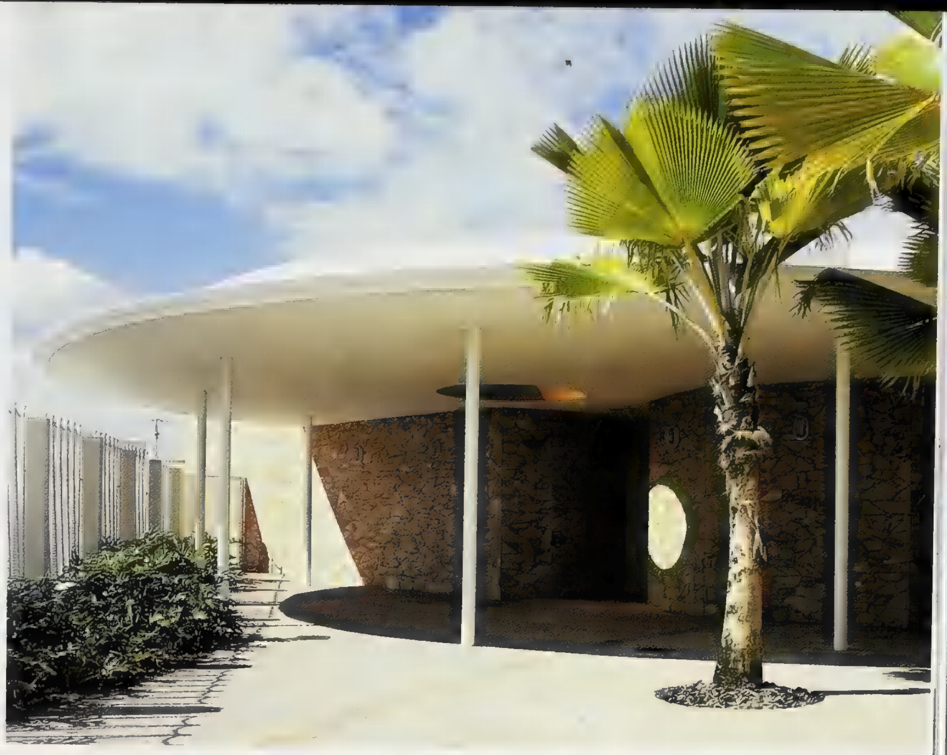
Rather than seek an overarching "big idea," the designers allowed themselves to be guided by a variety of influences as they fitted the new program into the loose triangle of open space defined by the existing structures. The partners discussed the strange calm evoked by the angular courtyards found in the massive, brooding fortifications in Old San Juan. "We refer to it as an arts citadel," explains Davis, not entirely seriously. But they also examined the tiled domes, serpentine loggias, and sensuously rippled courtyards of the National Art Schools complex erected in Havana in the early 1960s to the designs of Ricardo Porro, Vittorio Garatti, and Roberto Gottardi.

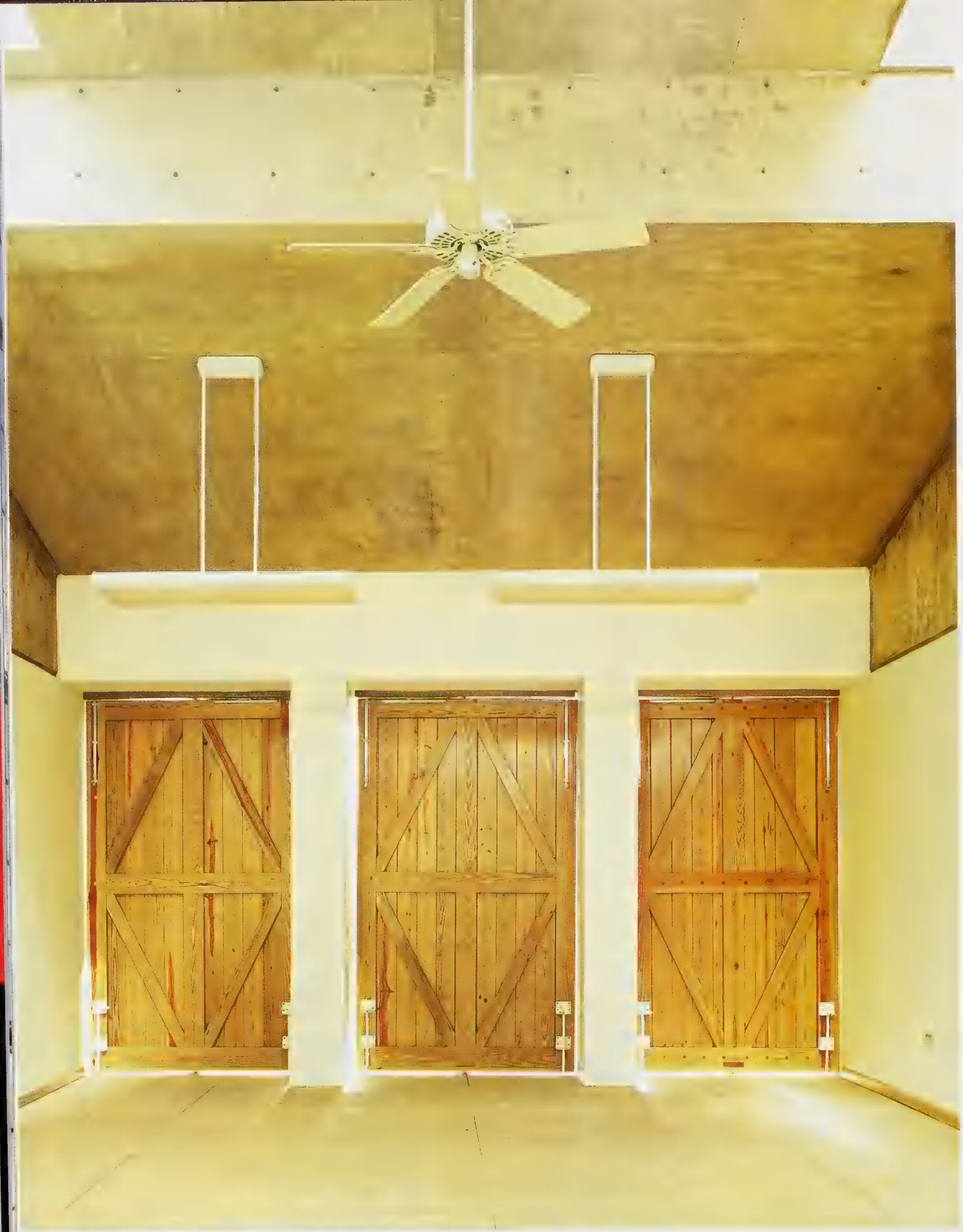
Anchored by the symmetrical U of the 1928 building, which they turned over to primarily administrative use, Davis and Fuster drew a hemicycle of music practice rooms around an outdoor amphitheater and stage—the one outdoor space regularly shared by the entire school. (It is used for performances and as a place where children can wait for their parents to pick them up.) Another hemicycle rounds the sharp northeastern corner of the site, creating a courtyard for the art studios. It attaches to the long, narrow, two-story 1960s structure, which has been adapted for dance instruction and which faces another new courtyard. The auditorium and its ancillary spaces link the dance building to the music and administrative buildings.

"A lot of what we did was hooking things together," explains Davis. But there's an intentional ambiguity in joining such complex building forms. The two-story circulation space that unites auditorium,

PHOTOGRAPHY: © MATTHEW HRANEK

A light slot on the interior edge of the music department's curving loggia (opposite and below) diffuses enough sun to balance the powerful brightness from the courtyard. Sheet metal shields the door of the 1928 building (left), and a curved roof provides shade (right).



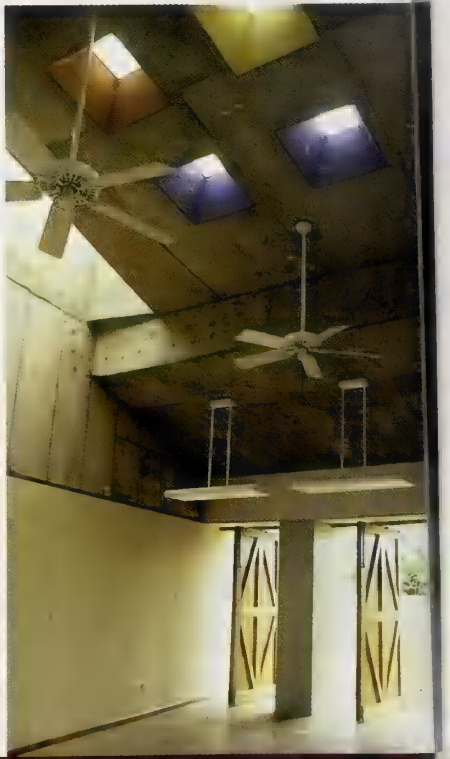


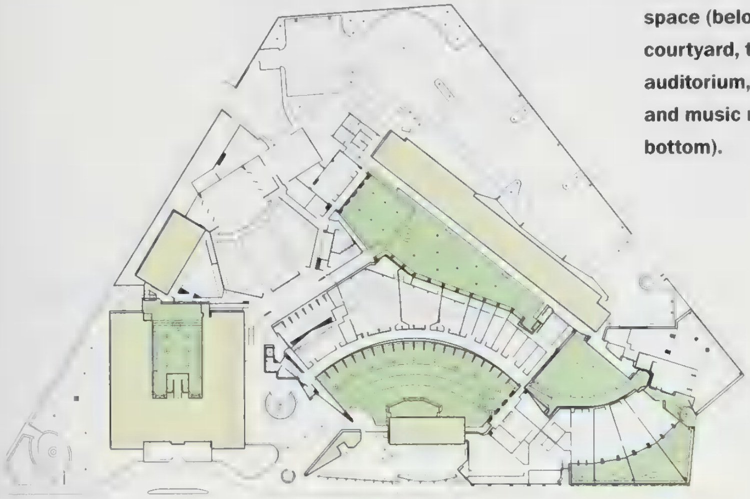
Top-lit art studios (above) open to individual courtyards (right). Like several other spaces, doors at the opposite end open to a shared courtyard, permittng cross-ventilation. The painted skylight surrounds are among many small touches, that, says J.R. Davis, "add a little magic."

entrance, and music rooms is dense with bridges, stairs, and ramps emanating from a number of directions (opposite, bottom right). Sun-shading devices respond to pragmatic need in surprisingly expressive ways. Transition points offer peek-a-boo views and willful if sometimes bewildering juxtapositions of sun and shadow, columns, piers, and screens. Each gesture, along with the splashing of fountains, draws the visitor to the next unfolding of experience.

Commentary

A look at the congested geometries of the floor plan may suggest that the architects have bitten off more than they can chew, especially on a fairly tight budget. The juxtapositions of walls, roofs, and materials aren't always neatly resolved, but this is not a project that relies on tidiness. Instead, the architect has offered students a wealth of experiences. You can't predict what will be around the next corner, but you want to find out. The building gauges changes in light, weather, and the seasons—connecting students sensually to the environment outside this fenced and walled compound. In terms of urging budding artists to learn about the world around them and each other, not just nailing their high notes or getting their paint color just so, architecture cannot do much more than this. ■

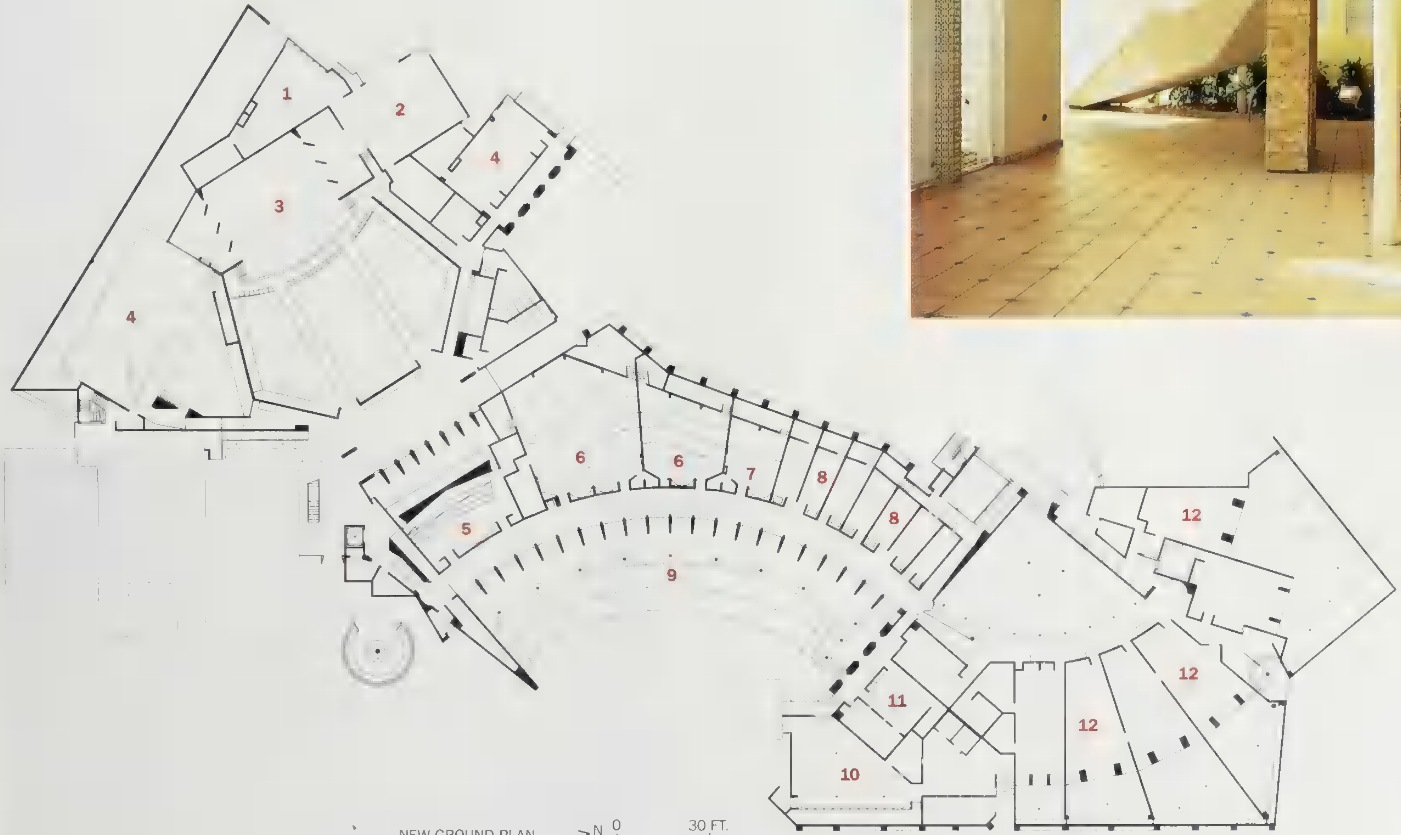




SITE PLAN

Dreamlike thresholds abound (right), including the two-story space (below), lit by a courtyard, that unites auditorium, entrance, and music rooms (plan bottom).

1. *Scenery shop*
2. *Storage*
3. *Auditorium*
4. *Percussion studio*
5. *Chorus room*
6. *Band room*
7. *Music room*
8. *Rehearsal room*
9. *Amphitheater*
10. *Kitchen*
11. *Administration*
12. *Art studio*



NEW GROUND PLAN

The Gateway School of New York

New York City

4

ABA STUDIO/ANDREW BARTLE ARCHITECTS CARVES A NARROW ROW HOUSE INTO A JEWEL OF A SCHOOL FOR LEARNING-DISABLED STUDENTS.

By Deborah Snoonian, P.E.

Architect: *ABA Studio/Andrew Bartle Architects—Philippe Baumann, project architect; Andrew Bartle, AIA, architect of record; Scott Henderson, Meg Henry, Adrian Allen, project team*
Client: *The Gateway School*
Engineers: *Robert Silman Associates (structural); Rey Prego Consulting Engineers (mechanical); Robert Schwartz & Associates (specifications)*
Consultants: *Continental Lighting Systems (lighting); Cerami & Associates (acoustical); Karla Rohland, The Atlantic Group (furniture); Municipal Expediting (expediting); JS&B Associates (client representative)*
General contractor: *The Shannon Group*

Size: *10,034 square feet; 55 students*
Cost: *$2.8 million*
Completion date: *August 2000*

Sources
White glazed brick: *Elgin-Butler*
Aluminum curtain wall: *New York Steel Services*
Insulated panels/plastic glazing: *Kalwall*
Wall-mounted tables: *Nelson-Adams*
Resilient flooring (gym): *Tembec*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

Program

What kid wouldn't appreciate a school that feels like home? When the Gateway School, a private school in Manhattan for 55 developmentally challenged elementary school students, outgrew its rented two-story space on the Upper East Side, they bought a 19th-century row house in Greenwich Village and asked ABA Studio/Andrew Bartle Architects to tailor it to their special needs. The four-story row house, once called the Rutherford House, had been a private residence, a home for unwed mothers, and, most recently, a social club. It was a little more than 87 feet long and 23 feet wide at best. Not surprisingly, it required substantial renovation and expansion to accommodate the program, which called for classrooms for instruction and therapy, recreational areas, an assembly room, and support spaces. The client also wanted the school to be easy to navigate and to feel spatially open so staff could supervise students easily.

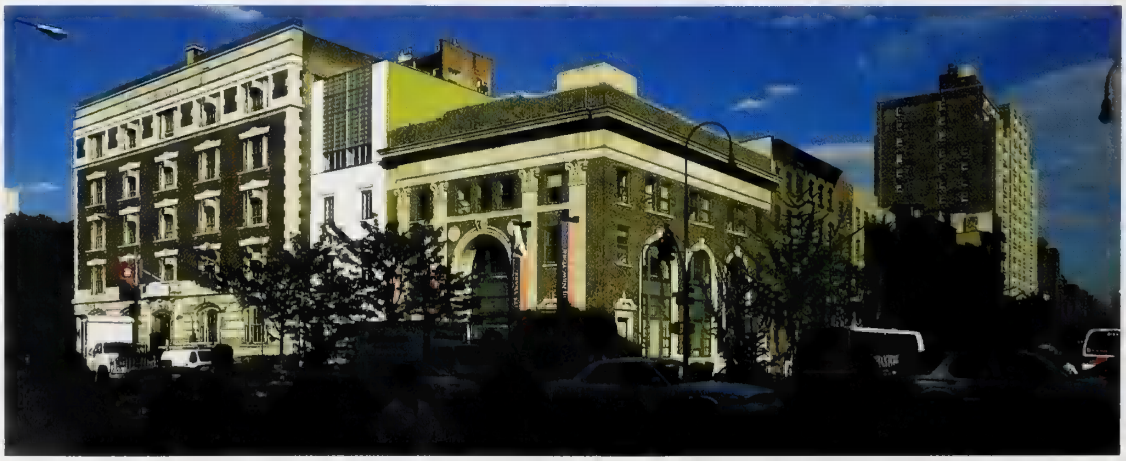
Solution

The first priority was adding space. The architects accomplished this by extending the back of the building 6 feet and adding 20 feet to the top of the structure—a rarity in New York architecture and inspired by the 16th-century apartment-topped Theatre of Marcellus in Rome.

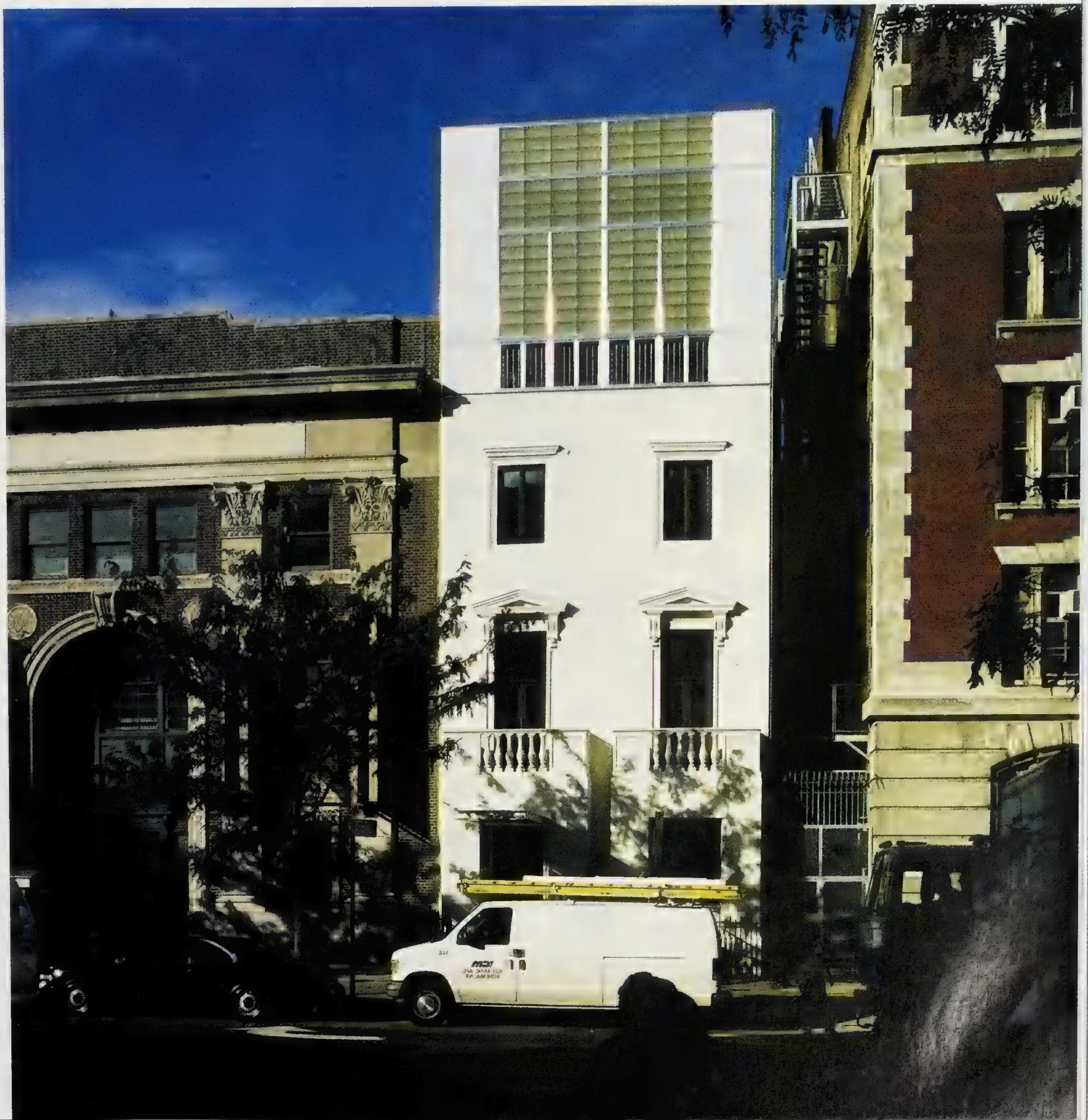
Outside, the architects replaced the entry stair with a cantilever-covered ramp for handicapped access that extends into the building. A reception area and offices share space on the first floor, along with classrooms located in the building's front and rear, where light is most abundant. This dumbbell shape—larger rooms for instruction and socializing at the front and rear of the building, with smaller support spaces located off connecting corridors—is repeated on each floor. "Visualizing the floors as variations on the dumbbell shape helped us conceive of all the spaces the school needed," says project architect Philippe Baumann.

The lobby stair leads to the Grandstand Room. Once a ballroom, it's where the students eat lunch and gather for assemblies and other group activities. The space-saving lunch tables fold down from the walls like Murphy beds.

Classrooms and support spaces occupy the lower and middle floors, while the upper floors house a gymnasium and outdoor rooftop play area. Translucent panels on the gym's west wall were scaled to harmonize with the building's basket-weave glazed-brick exterior. The play area, which brings daylight inside, is encased in steel mesh.



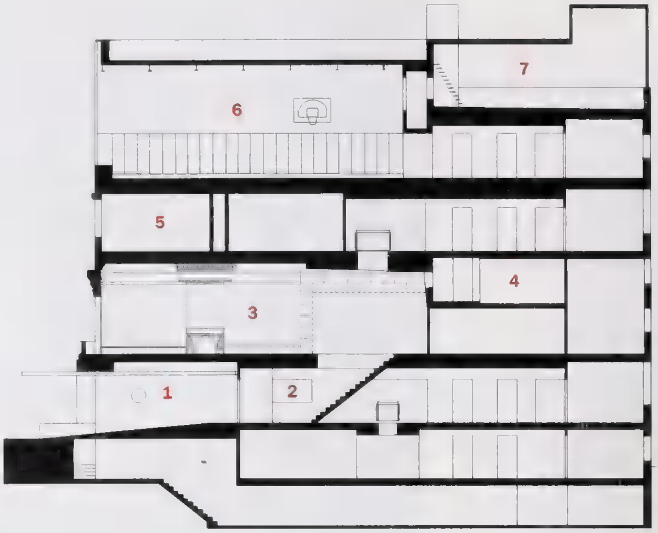
PHOTOGRAPHY: © PHILIPPE BAUMANN (THIS PAGE AND OPPOSITE, BOTTOM);



The sides of the Gateway School are painted chartreuse, which provides a lively contrast to nearby brick and concrete buildings (opposite and this page, bottom). Firm principal Andrew Bartle, AIA, who once trained as a painter, doesn't shy away from bold color choices. Sleek wooden storage cabinets hold supplies and equipment for the Grandstand Room (top left). The light-filled gymnasium, seen from a viewing platform, fronts Second Avenue (top right).

STEVEN MAYS (ALL PHOTOS)

An oval-shaped opening cut into the third-floor hallway (above), surrounded by a colorful Plexiglas-and-steel guardrail, lets students peer into the Grandstand Room below as they leave their classrooms.



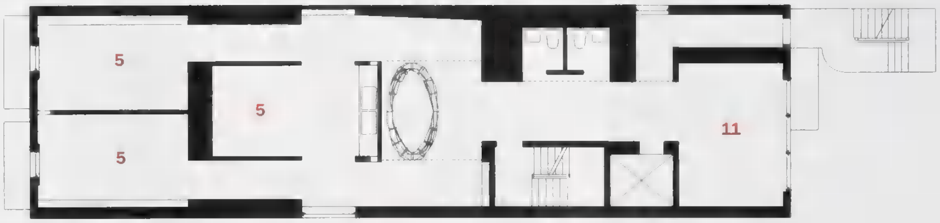
LONGITUDINAL SECTION

1. *Entry ramp*
2. *Entry lobby*
3. *Grandstand Room*
4. *Mezzanine*
5. *Classroom*
6. *Gymnasium*
7. *Rooftop play area*
8. *Office*
9. *Garden*
10. *Kitchen*
11. *Therapy*

To create acoustic and visual continuity throughout the building, the architects made a number of sectional cuts. A mezzanine added between the second and third floors overlooks the kitchen; the gym has its own observation platform; and an opening on the third level and an oculus on the first level permit light from upper floors to penetrate below. Thoughtful placement of these viewing areas allows teachers to monitor students as they move throughout the day. Floors are also color-coded to help students differentiate the various spaces.

Commentary

Faced with a narrow lot and height restrictions that made meeting the client's space requirements difficult, the architect nevertheless used the site to its fullest potential. The floor plan is masterfully conceived and easy to understand, despite the building's six-story height. School director Davida Sherwood says the building is "lovely and calming"; Andrew Bartle calls it "a Swiss clock." As you move through its warmly colored, cozy hallways and catch glimpses of the floors above and below, you get the sense of being inside a lovingly carved sculpture. Unlike many K-12 projects, the scale, detailing, and gentle transitions to major spaces make the Gateway School feel more domestic than institutional—a sensibility that clearly conveys the school's small size and special mission. ■



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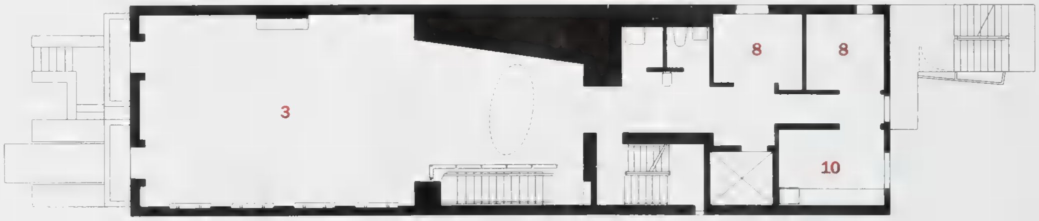

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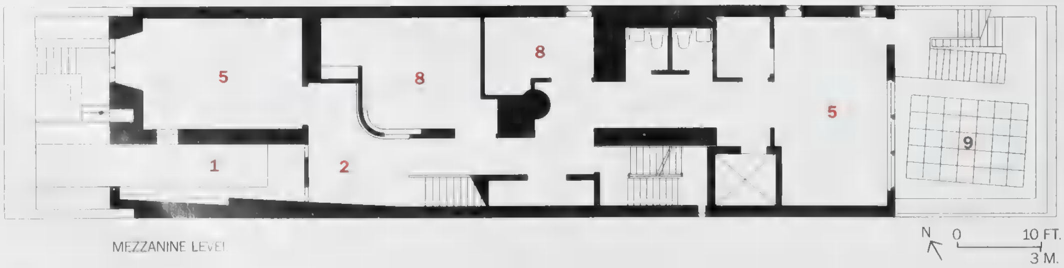

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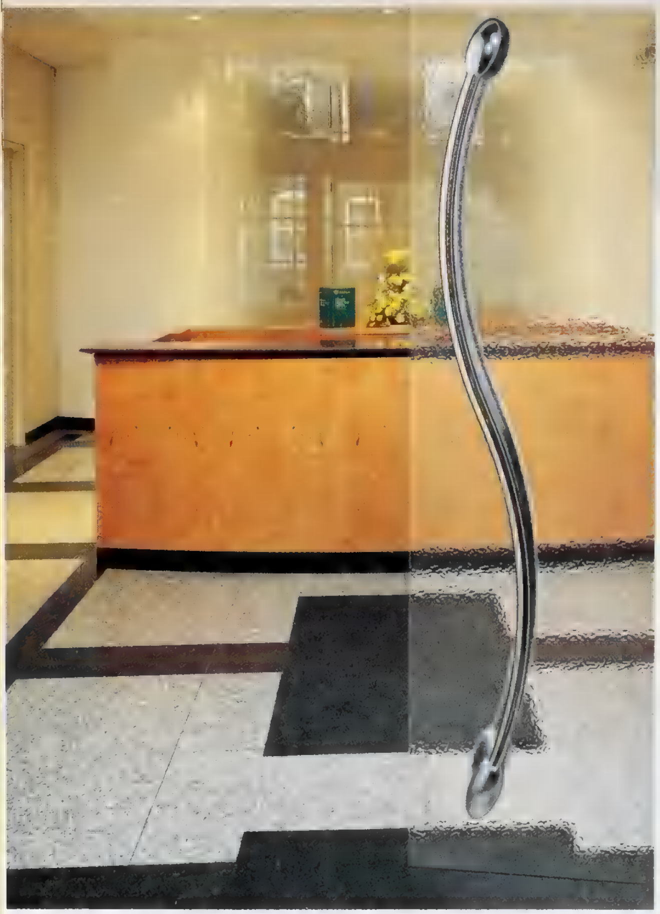

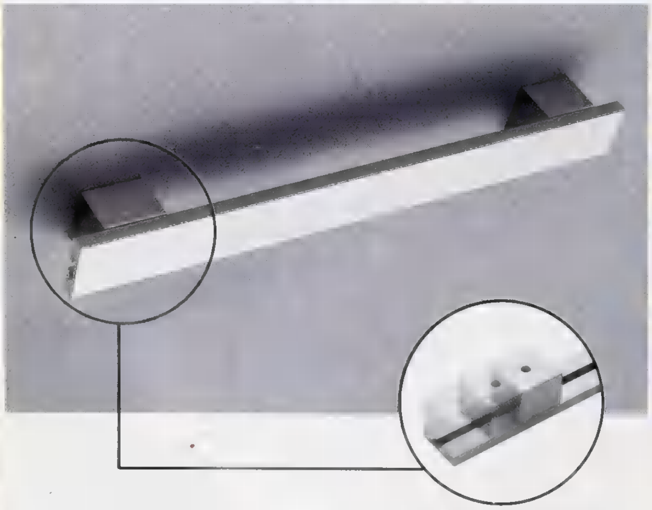

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Fast-track construction becomes the norm

CLIENT, ARCHITECT, AND CONSTRUCTION MANAGER MUST PERFORM A DELICATE BALANCING ACT TO SHRINK THE CONSTRUCTION PROCESS AND SAVE TIME AND MONEY.

By Barbara Knecht

A Manhattan developer accelerates construction to accommodate a tenant displaced when the World Trade Center was destroyed on September 11. A Connecticut school needs a new dormitory ready for occupancy when students arrive. Researchers must be in their company's new laboratory in order to beat the competition to market with a new product. A sports-apparel company, forced to vacate its leased facility, gives its architect a scant eight months to design its new headquarters. All these projects were fast tracked into existence because clients are increasingly unable and unwilling to accept the protracted schedule of conventional construction.

Fast-track construction has been around for decades (see Digital Architect, page 133) and now, according to some industry associations, accounts for as much as 40 percent of building projects. Briefly stated, fast tracking compresses the project schedule by running design and construction phases simultaneously. For example, in a typical fast-track project, foundation and steel packages are purchased before the building layout is fixed. Design may run as little as a week ahead of construction, and myriad design decisions are made in the field.

The structural system for the 330-foot, curved-and-canted spine curtain wall was the most technically difficult problem NBBJ faced in designing the Reebok Headquarters.

PHOTOGRAPHY: © ASSASSI PRODUCTIONS

Time is money

Paradoxically, while the decision to fast track a project is nearly always an economic one, the final costs are generally unknown during the process. For commercial owners, the potential for profit is worth the risk; whereas, for many not-for-profit and government owners it is essential to know the total cost going in, so that they do not pay too much for any one item. (This is often true even if they underpay for other items and the total cost is the same.) These kinds of assurances are unlikely to exist in a fast-track project. "I think it is safe to say, depending on the construction manager and the level of documentation, you may need to buy at a little more inflated price, but if you are saving time, you should be able to make it up on the interest on the construction loan and should be able to collect rent sooner [on a commercial building]," says Joe Aliotta, principal of New York–based Swanke Hayden Connell, who estimates that about a third of his firm's work is fast tracked.

The usual way of controlling cost is to have a guaranteed maximum price given by the construction manager during the later phase of design development or early phase of construction documents that is based on a good understanding of the architectural intent. In the early stages, the architect has to anticipate and describe design elements not yet shown, while the construction manager will need to extrapolate potential costs based on experience, and both must communicate their assumptions to the owner. As the design progresses, it is the construction manager's role to manage the costs. As the price of one item escalates, the

Barbara Knecht is an architect and principal of a New York City–based consulting firm. She writes about architectural technology, design, and housing policy.

CONTINUING EDUCATION

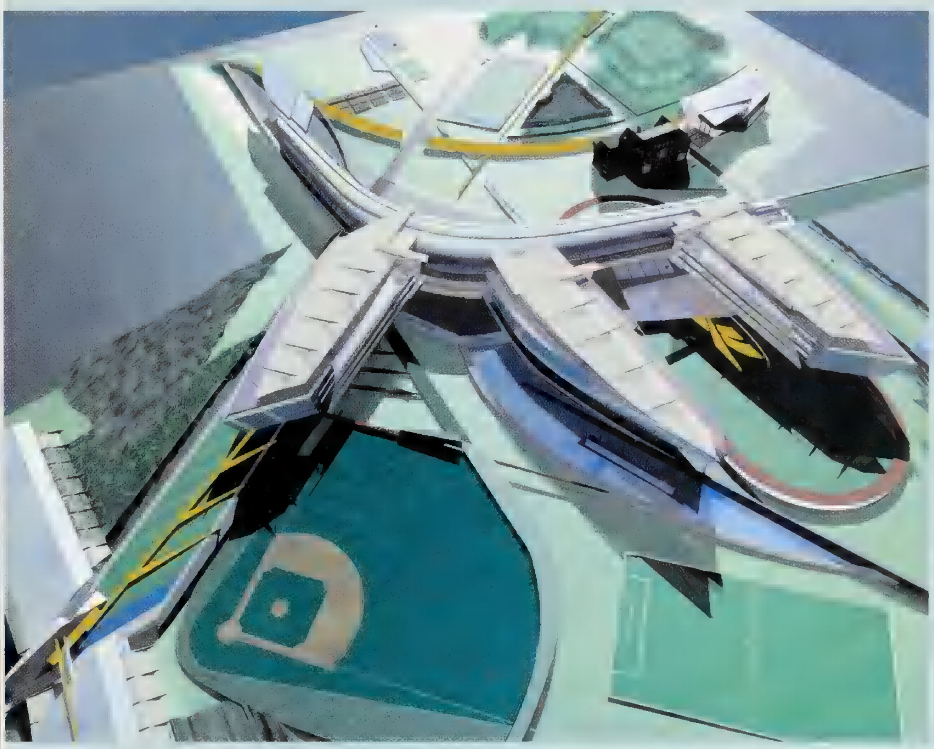
Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/*AIA Continuing Education article. To receive credit, also read "The Digital Fast Track" on page 133, then turn to page 180 and follow the instructions.*

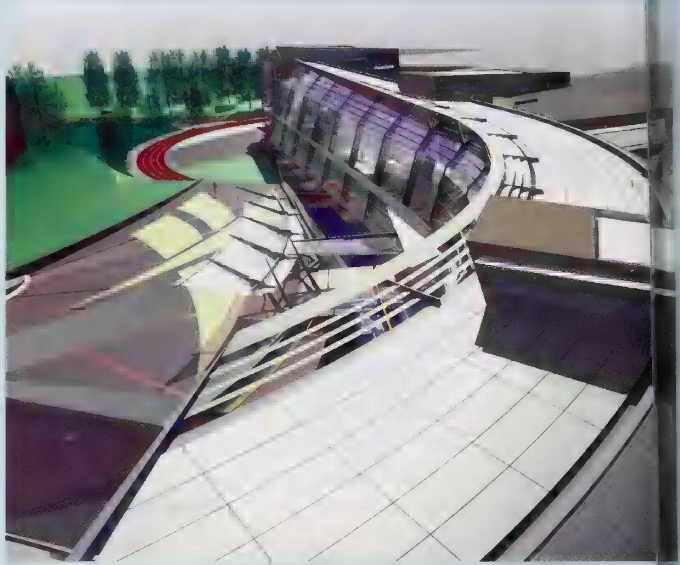
LEARNING OBJECTIVES

After reading this article, you should be able to:

1. *Describe situations where fast-track construction is used.*
2. *Explain how fast tracking works.*
3. *List the advantages of fast-track construction.*

WWW For this story and more continuing education, as well as links to sources, white papers, and products, go to **architecturalrecord.com**.





NBBJ pushed the limits of 3D modeling (left and below) to reduce the delivery time by 50 percent. The architects created the design with Alias/Waveleng software running o high-end Silicon Graphics (SGI) work stations. (See Digit Architect, page 133

Reebok International World Headquarters
Canton, Mass.
Architect: *NBBJ, Seattle (Scott Wyatt, partner in charge; Richard G. Buckley, partner in charge, competition; Steven McConnell, design principal)*
Date of completion: *June 2000*
Construction manager: *Turner/O'Connor*

RENDERINGS COURTESY NBBJ

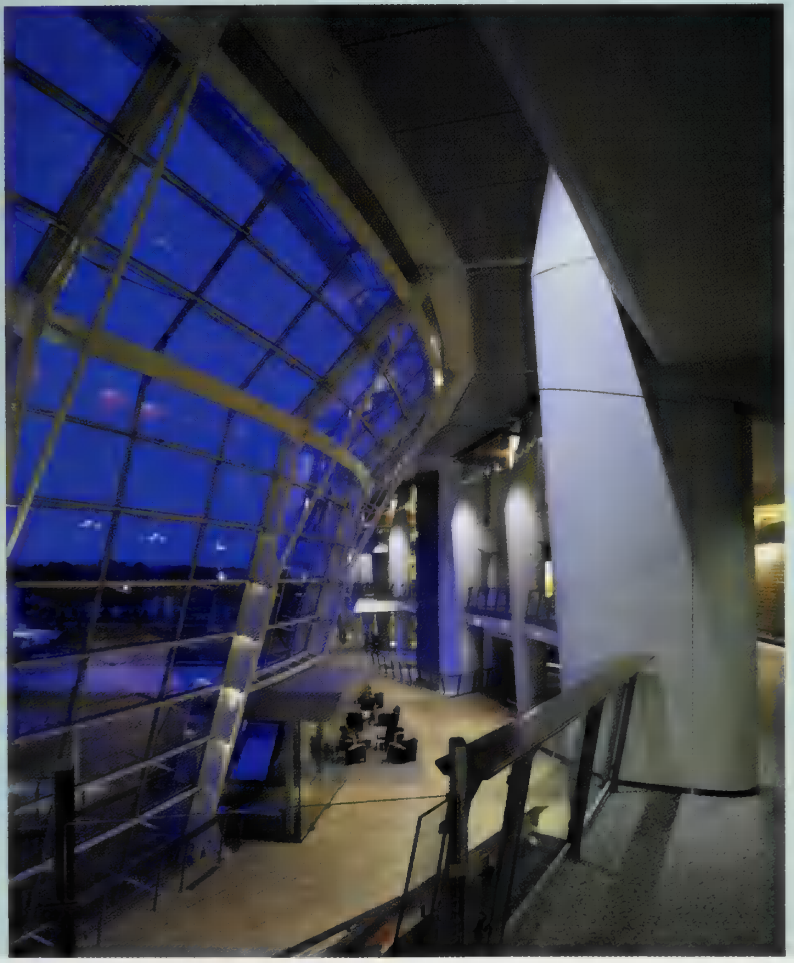
cost of another will have to be reduced. Some contracts will carry a design contingency, which is likely to be consumed by the end of this phase. An experienced team with good communication skills will keep to the budget through construction. Still, it is a journey into uncertainty.

Risky business

Fast-track construction is not suitable for the risk-averse owner, architect, or construction manager. No construction project is immune to delays, but all of the advantages can evaporate and the disadvantages multiply if the process is not closely managed to anticipate the unexpected and resolve problems instantly.

Project management is the key to success. No matter which principal participant (architect, construction manager, or owner) is driving a particular set of decisions, the other two will have to be flexible and willing to compromise as each gives input at every stage of design and construction. Having the construction manager on board early will always yield a better product. In fast track, many other design decisions may be controlled by schedule and directed by the construction manager, including material choices and construction methods. A construction manager who knows the market conditions at the time of construction may recommend against a material or a trade that is in short supply. In a fast-track project, schedule rules decisions. For some, there is a positive aspect to this parameter. Jim Wilson, president of Ewing Cole Cherry Brott in Philadelphia explains, "I like [fast tracking] because it imposes discipline over the decision-making process. Sometimes with no schedule, things just keep changing." Most of the Ewing Cole Cherry Brott's projects are fast tracked, from the Whitehall-Robins Pharmaceutical Research and Development Facility in Richmond, Virginia, to the new stadium for the Philadelphia Phillies. Whitehall-Robins included demo-

FAST-TRACK CONSTRUCTION IS NOT SUITABLE FOR THE RISK-AVERSE OWNER, ARCHITECT, OR CONSTRUCTION MANAGER.



The low-tech, but highly effective, "Dynamic Calendar" (below) consists of hundreds of Post-It notes, which focus on the Who/What/When interrelationships of critical path issues. The office wings (above) are standard curtain wall construction. The curtain wall was designed with cable-tensioned trusses (left).

PHOTOGRAPHY: © ASSASSI PRODUCTIONS

lition, renovation, and new construction on a 30-acre site, all while operations continued uninterrupted.

When a site was selected at the close of 1999 for a new stadium for the Phillies, the team owners specified a 2004 opening. By fast tracking the project, a 55-month process was compressed to 39 months by a couple of means. The first construction packages—excavation and water removal—went out for bid nine months after the project began. Piling drawings were issued post–design development, and subsequent packages have been issued steadily as the building has risen out of the ground. "There hasn't been a lot of rethinking of the main concepts; the major needs were met in the schematic phase. But we began to refer to it as a renovation project, as changes were made in meetings with the Phillies after the piling drawings were out to bid," remarks Bob McConnell, the project architect.

The role of design

Most design professionals believe that only nonspecialized building types with repetitive spaces and standard construction make suitable candidates for fast-track construction. "In cases where you are doing a one-off, customized building, the more you speed up the construction time, the harder it is to get things coordinated, the less iteration in design, the more mistakes, and the longer punch list you will end up with," explains James Timberlake, FAIA, of Kieran Timberlake in Philadelphia, who, with his partner, Stephan Kieran, FAIA, is researching ways to speed up the construction process by borrowing methods and processes from other industries [RECORD, January 2002, page 131].

Even those architects who have embraced fast-tracking methods are concerned about design quality when so many decisions are literally fixed in concrete and steel before all the iterations and details have been studied. When schedule dictates the process, there isn't time to study and revise the design as more is learned through development of details; materials and structural systems may be imposed for expediency rather than optimal design.

Steve McConnell, design principal at Seattle-based NBBJ, believes the Reebok Headquarters in Canton, Massachusetts, is one of his

Whitehall-Robins Pharmaceutical Research and Design Facility Richmond

Architect: *Ewing Cole Cherry Brott, Philadelphia (James A. Wilson, project director and lab planner; Don Jones, project manager and designer; Glenna Dugan, project architect)*

Date of completion: *July 1998*

Construction manager: *Sordoni Skanska USA*

The Whitehall-Robins project (above) was an upgrade and expansion involving six buildings. The overall project team was organized into four subproject teams, one of which was responsible for the laboratories (left), in order to manage the fast-track project.

firm's best-designed buildings. Reebok was more than six months into design when it concluded that its first architect didn't share the company's vision for the future. After conducting a limited competition for new concepts, Reebok selected NBBJ on the strength of its ideas and the expectation that the firm would deliver the building within 31 months.

Faced with stiff penalties if they were unable to vacate their offices by midsummer of 2000, fast tracking became the only solution. NBBJ's ability to produce a 522,000-square-foot headquarters within the schedule constraints and tight budget depended on making design decisions early and having a disciplined team to produce the documents. The client accepted the design concept without major revision, because, according to McConnell, NBBJ addressed all Reebok's needs in the first presentation. From that point, the team decided to solve the hardest design challenge first—a structural system that wouldn't obstruct views through the 330-foot, curved-and-canted, steel-and-glass spine curtain wall. By making this dominating architectural element the first order of business, the architect had sufficient design time and was able to gain the confidence of the client regarding both cost and concept.

Creating team spirit

Within the design process, McConnell credited three things that enabled NBBJ to deliver the design in eight months. First, the use of three-dimensional computer modeling (see Digital Architect, page 133) during the initial design made iterations and revisions quick. Secondly, near the end of schematics, the entire design team stopped what they were working on and devoted two weeks to building an ⅛-inch scale model. The exercise engendered a cohesiveness in the team by giving each member a thorough understanding of what they were making. Third, a team structure was

THOSE WHO ARE GREAT PROPONENTS OF FAST-TRACK CONSTRUCTION HAVE EXCELLENT RECORDS ON TEAMWORK.

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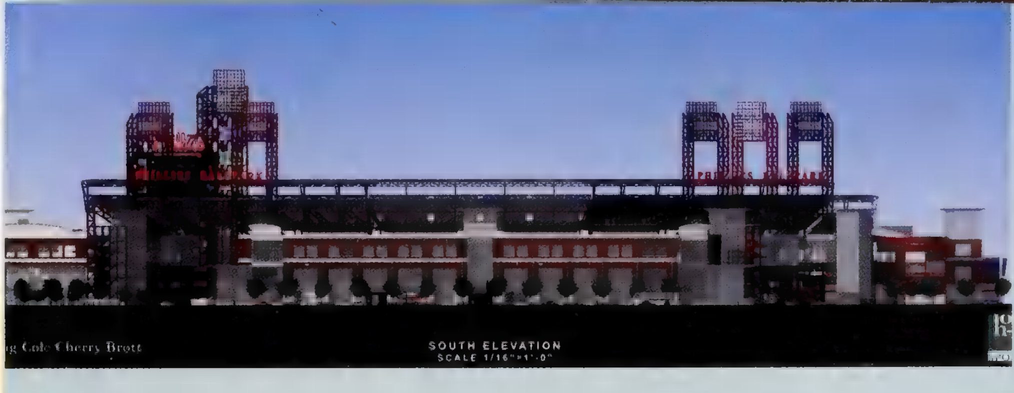
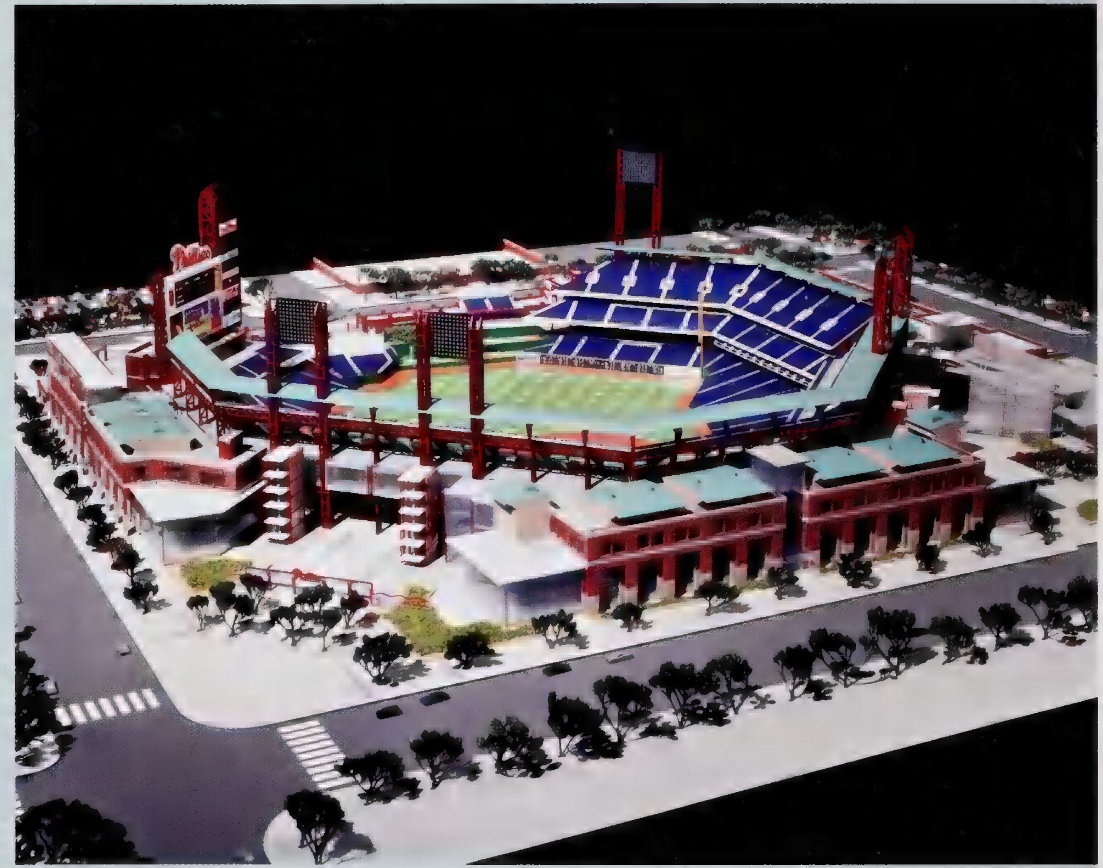


The new Phillies Stadium (left and below) will be located on a site below the water table, so the geotechnical bid packages were issued nine months after the start of the design. Fast tracking many of the bid packages shortened the schedule by more than a year.

Phillies Ballpark
Philadelphia
Architect: *Ewing Cole Cherry Brott, Philadelphia (Pradeep Patel, principal and project director; Don Jones, project manager and designer; Robert McConnell, project architect and planner)*
Consulting architect: *HOK Sports Facilities Group, Kansas City, Mo.*
Date of completion: *April 2004*
Construction manager: *L.F. Driscoll*



RENDERINGS COURTESY EWING COLE CHERRY BROTT

organized by programmatic building areas through schematics and then reorganized by building systems to complete the construction documents.

It seems clear that those who are great proponents of fast-track construction have excellent records on teamwork. Ewing Cole Cherry Brott has reconsidered its organization. According to Jim Wilson, "We now put all the disciplines together in the same studio so that they sit by project and not by discipline. There is more speed in conflict resolution. We have even given clients and construction managers space in our studio if they want it, and this [convenience] is reciprocated in the field."

GREATER FIELD PRESENCE IS THE NORM IN FAST-TRACK PROJECTS; IT IS STILL THE FASTEST FORM OF COMMUNICATION.

As with NBBJ's organization of teams of designers to solve specific problems, Ewing Cole Cherry Brott broke down the $75 million Whitehall-Robins Pharmaceutical Research and Development project into smaller subprojects with a separate project team, budget, and schedule for each. Faced with an upgrade and expansion of six occupied buildings totaling 265,000 square feet and a 24-month schedule, the architects divided the site into four separate building projects.

Greater field presence is the norm in fast-track projects; it is still the fastest form of communication, and most architects have a daily presence on fast-track sites to resolve issues and coordinate the work with those team members in the office. In the case of Whitehall-Robins, the on-site decisions were typical field coordination issues, such as conflicts between architectural space and engineering systems or unanticipated design problems. But on-site presence meant that work was never disrupted while waiting for decisions. Field directives and sketches issued and logged into the Web site were immediately and simultaneously available to contractors and the home office.

Even faster tracking

A mere 15 years ago, faxes and overnight air delivery were state of the

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art in communication support systems. Details could be sent nearly instantly, and drawings could be delivered between cities rapidly. Advancements in communication technology have been a huge assistance to fast tracking. For any sizable project, documents, including meeting notes and other records, are routinely put on the Internet for all team members to access and modify. Changes can be recorded in a matter of hours instead of days.

Reebok has more lessons to teach in this area. Many of the complex forms were created using 3D computer modeling (see Digital Architect, page 133, for more information about digital fast tracking). Digital data from the object-based modeling was transmitted directly to fabricators and suppliers to be used in making the forms. The need for a savvy and coherent triumvirate of owner, construction manager, and architect becomes more apparent when the stakes are higher. Construction methods assure that, no matter how many standard parts and repetitive components a building has, every one is still a handmade product, subject to volatile conditions. Modeling technologies, construction innovations, and communication tools will reduce unforeseen problems in critical construction time lines and support design innovation. ■

This article is a companion piece to this month's Digital Architect story, starting on page 133. You must read both articles to answer the continuing education questions on page 180.

Knowing how much time costs

Sarah Slaughter, CEO and president of Models of Construction Activities (MOCA) Systems, Inc. (www.mocainc.com/), has developed a microsimulation environment that models the entire construction process. It provides comparative information on design and construction alternatives at a high level of detail, usually experienced only during actual construction. According to Slaughter, "The power of the hardware allows us to do this kind of analysis quickly and efficiently." The analysis can be employed at the conceptual design stage to make basic decisions about the size and scale of a building and, as the design progresses, to select the best systems based on first and ongoing costs as well as performance under actual conditions. MOCA can analyze the impact on the overall schedule of any one trade or construction method. With this tool, time can be saved where it will have the most financial impact. "Time has a low monetary cost at the beginning, during design, but when [construction] is delayed two weeks, and no one can move in, that time is very expensive," explained Slaughter. Performing the work of a trade or a phase in half the time has no value unless it shortens the overall schedule. The microsimulation enables the construction team to perform such analysis prior to construction start. *B.K.*

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- **Read the articles "Fast-track Construction Becomes the Norm" (page 123) and the "The Digital Fast Track" (page 133).**
- **Complete the questions below, then fill in your answers (page 180).**
- **Fill out and submit the AIA/CES education reporting form (page 180) or download the form at www.architecturalrecord.com to receive one AIA learning unit.**

QUESTIONS

1. Fast-track construction accounts for what percent of building projects?
  a. 20 percent
  b. 40 percent
  c. 60 percent
  d. 80 percent

2. Since the final costs are unknown during the construction process, fast tracking is best for which type of client?
  a. commercial
  b. not-for-profit
  c. military
  d. government

3. When using fast tracking, the key to success is which?
  a. having the architect in charge
  b. having the construction manager in charge
  c. having the owner in charge
  d. project management where each participant remains flexible

4. Instead of giving a guaranteed maximum price, the construction manager in fast tracking does which?
  a. estimates the final cost
  b. reduces the cost of some items when other costs escalate
  c. anticipates costs and communicates them to the owner
  d. takes out a bond to cover costs the owner cannot pay

5. The drawbacks of fast tracking include all except which?
  a. easy iteration of design details
  b. materials and systems may be imposed for expediency
  c. no time to study and revise the design
  d. decisions are fixed in concrete and steel before all the details have been studied

6. Which of these is not credited as helping NBBJ to deliver their design quickly?
  a. three-dimensional computer modeling
  b. building a scale model of their design
  c. posting all design changes on the Internet
  d. the team structure was organized by program areas through schematics, then by building systems during construction documents.

7. Why is the architect's field presence the norm in fast-track projects?
  a. being on-site offers the fastest communication
  b. the architect can resolve issues immediately
  c. work doesn't have to be disrupted while waiting for decisions
  d. all of the above

8. Which method is now the state of the art in communicating documents and meeting notes in fast-track construction?
  a. faxing information
  b. posting information on the Internet
  c. overnight delivery of drawings
  d. satellite uplink from job site to all offices

9. 3D modeling computer programs are used to do all except which?
  a. input details into the design
  b. show the visual impact of the design
  c. generate construction drawings
  d. estimate quantities and costs

10. A network of dependencies identifying activities that had to be completed before other activities could start is known as which?
  a. fast tracking
  b. construction management
  c. parametric design
  d. critical path method

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Getting onto the digital fast track

By Jerry Laiserin, FAIA

Popular books about the computer and communication revolutions tend to focus on speed. They say the pace of business is accelerating to computers' clock speeds, and that time-based competition will be so fast that everything merges into a blur. These trends may hold true for industries as diverse as financial services, entertainment, and medical diagnosis, but digital acceleration has not had as great an impact on the brick-and-mortar realities of design and construction. Entire generations of software and hardware can become obsolete during the time it takes to complete a project. Still, architects are learning to hitch their creaky design and project delivery wagons to the high-speed engines of digital technology to race onto the fast track.

What's in a name?

The term "fast track" is a spin-off from information technology. Studies conducted for the State University of New York during its multicampus building boom of the 1960s identified opportunities to compress project delivery cycles by overlapping activities that had typically been performed in rigid sequence. New computer-based project scheduling methods placed tasks in a network of dependencies—identifying activities that had to be complete before others could start. No project could move faster than the start-to-finish chain of dependencies known as the critical path (hence the name critical path method, or CPM). If knowledge is power and time is money, CPM represented a way to transmute project information directly into dollars.

Early devotees of construction management (C/M), recognizing that keeping projects on schedule depends as much on the flow of information as it does on available materials and labor, sought to manage information to get projects on an even faster completion schedule than the critical path itself dictated. For example, if a university building was programmed to contain 30 classrooms, information about the classroom doors could be used to preorder them and process the related submittals and shop drawings long before the "purchase doors" task came up in the CPM schedule. For architects, this type of fast-tracking often involved detailing and specifying components and assemblies within a building before the overall design was finalized. Conversely, fast tracking also could entail dividing a project into bid packages that enabled the construction firm to pour foundations or erect steel while the architect was still designing interior partitions or casework. Either way, fast-track projects pose tricky problems for managing and coordinating information.

Contributing editor Jerry Laiserin, FAIA, provides strategic consulting services to architects and their technology providers.

CONTINUING EDUCATION

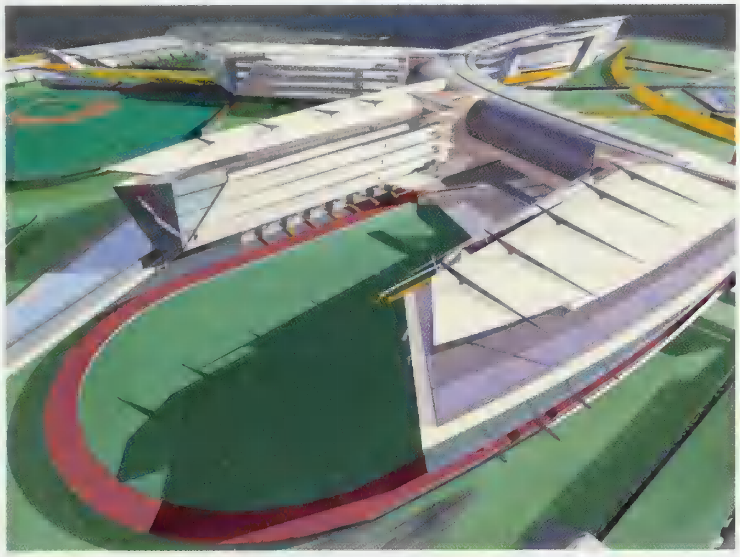
This article is a companion piece to this month's Building Science story, starting on page 123. You must read both articles to answer the Continuing Education Questions on page 180.

Need for speed

Architects started using computers to accelerate the production of project documents during the mid-1980s, and turned to Internet-based communication to facilitate project coordination in the mid-1990s. But progressive practitioners are using other types of digital tools to perform their work faster, quicken the transfer of project information to other members of the team, and shorten the time for consultants and contractors to turn around their work products to the architect.

Three-dimensional CAD models—sometimes called virtual buildings or parametric design systems—are intended to accelerate workflow through integrated data management and automated extraction of working drawings,

Firms like NBBJ rely on data-intensive 3D computer models throughout design and project delivery. The improvement in analysis and coordination of design and constructibility issues can compress project schedules by as much as 50 percent without compromising quality or design vision.



schedules, bills of materials, and so forth. This can put better information into contractors' hands earlier in the project, one of the hallmarks of fast tracking. Mark Robin, AIA, a Nashville sole practitioner who chairs the AIA's Small Projects Forum (SPF), observes that 3D modeling programs "allow the designer to input countless details into the model and to simultaneously update and track information across multiple-linked drawing files."

In a report to SPF, Robin notes that project collaboration networks such as Buzzsaw or e-Builder help shorten project schedules by eliminating the need to e-mail files to multiple consultants, and "instead, [collaborators] will be able to tap directly into the architectural model database via the Internet, adding and extracting their information as needed." [Editor's note: RECORD publisher McGraw-Hill is an investor in e-Builder.] Small firms and solo practitioners have proven "more nimble and adaptable [than larger firms] in using technology to move in and out of these new relationships," according to Richard Hayes, AIA, Director of the AIA's Center for Integrated Practice, adding, "Small project practitioners also are more open to networking their specialized expertise in project collaborations across greater distances." By leveraging technology to bring the most appropriate expertise to bear on each building, architects can further shorten project delivery cycles.

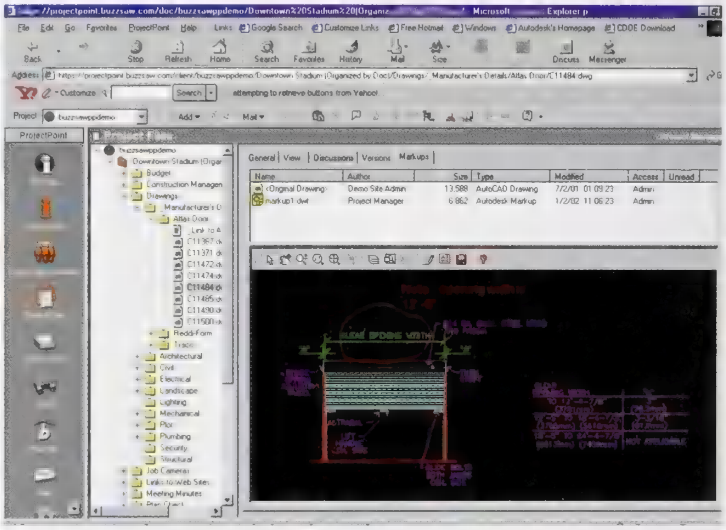
Living large

Although small firms working on small projects are more flexible in adopting fast-tracking tools, the most dramatic effects of these technologies are seen on large-scale projects that are typically the province of larger firms. The Reebok project (page 123) designed by NBBJ's Seattle office, pushed the limits of 3D modeling and data sharing to slash project delivery time by 50 percent. Design principal Steve McConnell, AIA, estimates that a project comparable to Reebok in size (550,000 square feet) and geometric complexity would normally have taken 14 to 18 months to build; NBBJ completed the job in eight months "without any feeling they had to compromise the design vision in order to meet the schedule," McConnell said. He adds that the key to this success was "a 3D digital modeling strategy from schematics all the way through data transfer to fabricators."

NBBJ created the initial computer model after a brief design competition among a handful of firms. Because the design concept involved "very complex curvilinear and angular elements with tricky geometric relationships," McConnell chose Alias|Wavefront software, running on Silicon Graphics workstations, a setup more commonly used for cinematic special effects than architectural models. It's not unusual for architects to generate early concepts in non-CAD modeling software such as form·Z, Autodesk VIZ, or Alias, but such models are often abandoned after initial client presentations because they can't be used to produce 2D CAD drawings for design development and construction documentation. But on the Reebok project, the client's aggressive schedule demanded design speed only achievable with a 3D model. NBBJ updated the Alias model throughout the project by working iteratively between 3D in Alias and 2D plans, sections, and elevations in AutoCAD. Data interchange between Alias and AutoCAD was accomplished through the neutral DXF file format.

The Reebok models were used for both design and communication purposes. They helped the project team study component relationships and reach design decisions faster, and, during an elaborate community approval process for the building, the 3D model was merged with global positioning system (GPS) data and aerial photography to reassure local residents that the building would have negligible visual impact on their neighborhood.

Although NBBJ often uses project collaboration networks on other projects, they did not do so on the Reebok job, relying instead on e-mail and file transfer protocol (FTP). Even this relatively low-tech means of transmitting information affords considerable time savings over transporting drawings via mail, and it is a distinct advantage in a security-conscious era when mail safety is under increasing scrutiny. Furthermore, NBBJ's model data were sent directly to custom fabricators of certain complex components, such as the curved steel exterior curtain wall columns and the amorphous fiberglass-reinforced gypsum column covers in the interior. Such direct communication slashed even more time from the project's critical path by short-circuiting the conventional cycle of shop-drawing submittals and reviews.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While many collaboration dot-coms failed to live up to their hype, surviving services such as Buzzsaw provide Internet-based document sharing and markup that can significantly accelerate project communications.

Reebok had chosen a negotiated-bid C/M process, with the construction manager on board before the architect was hired. McConnell reports, "The availability to the C/M of NBBJ's 3D model data took a lot of the mystery out of the quantification process." Faster and more accurate estimating of quantities and costs enabled the team to keep the project moving forward with greater confidence in the final result. Digital modeling and communication, combined with NBBJ's cost control expertise, also helped minimize the contentious aspects of the value engineering process that architects often associate with negotiated bid C/M projects.

Changes go forward

Based on 3D process successes such as Reebok, NBBJ switched its standard design-and-production tools from AutoCAD to Bentley Systems's Triforma for Architecture. McConnell describes it as "a full object-based system that gives us end-to-end 3D modeling and 2D documentation capability in a single package," with less effort needed compared to their previous Alias-AutoCAD hybrid process.

To McConnell, the benefits of fast-track technologies confer a competitive advantage on firms like NBBJ that can commit resources to acquiring and effectively using these tools. Hayes, at the AIA, adds that the competitive benefits apply to firms of any size that want to get on the digital fast track. ■

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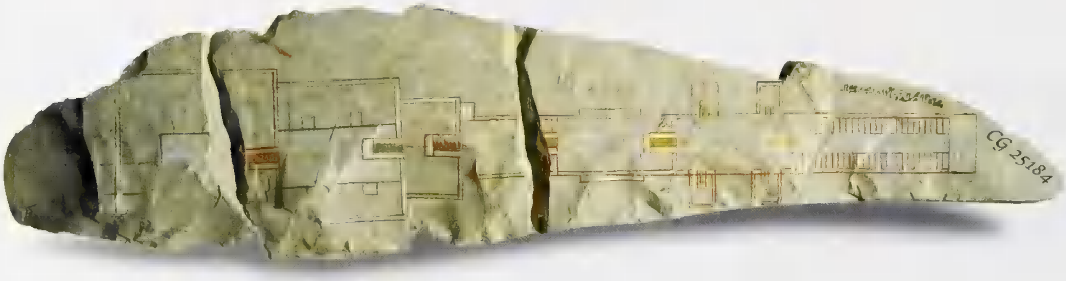
The Grand Egyptian Museum

International Architecture Competition



P24

Ostracon with a Plan of a Royal Tomb
Painted Limestone, Length 83.5 cm
Valley of the Kings,
Tomb of Rameses IX (KV 6)
Late Twentieth Dynasty (11th Century BCE)
G. Daressy's Excavations (1888)
One of the estimated 140,000 artifacts currently in the collection of the Egyptian Museum, Cairo.
Image from "Treasures of the Egyptian Museum"
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The American University in Cairo Press
Photography by Araldo De Luca

Invitation

This is an open invitation to architects and consultants from around the world to engage in a challenging act of creative design that stipulates a unique architecture and state-of-the-art museum complex for the long anticipated Grand Egyptian Museum. Egypt, the centre of civilisation, art, and culture, offers its unique site neighbouring the Pyramids of Giza as a genius loci for such a cultural and architectural challenge that best addresses the world's Third Millennium and Egypt's Seventh Millennium.

Challenge

First Phase - 7 May to 17 August 2002. Twenty winners will be announced October 2002 and will pass on to the Second Phase. Second Phase - November 2002 to March 2003. Winners will be announced June 2003.

Organisation

Regulated in accordance with the Revised Recommendations of the International Competitions in Architecture and Town Planning, adopted by the General Conference of UNESCO in 1978. Official language of the competition and all related correspondence will be English. Official measurement system will be Metric.

Jury Members

Architects:
Dr. Salah Zaki (Egypt)
Dr. Galal Abada (Egypt)
Mr. Peter Cook (England)
Mr. Teodoro Gonzales (Mexico)
Mrs. Gae Aulenti (Italy)
Mr. Jong-Soung KIMM (Korea - UIA representative)
Egyptologists:
Dr. Gaballah Ali Gaballah (Egypt)
Mr. Sergio Donadoni (Italy)
Museologist:
Mrs. Françoise Cachan (France)
Deputy Jury Members:
Dr. Fayza Haikal (Egypt)
Mr. Arne Eggebrecht (Germany)
Ms. Ana Maria Zahariade (Romania - Deputy UIA representative)
Technical Committee Coordinator:
Dr.Yasser Mansour (Egypt)

Prizes

First Phase: Twenty winners will receive a prize of $10,000US each. Second Phase: First prize: $250,000US
Secondprize: $150,000US
Third prize: $100,000US
A sum of $200,000US will be distributed among Honourable Mentions based on the discretion of the jury.

Contact

The Grand Egyptian Museum
International Architecture Competition
Coordinator: Dr. Yasser Mansour
Al Remayah Square, Pyramids, Giza, Egypt
Tel: (2) 02 386 59 17
(2) 02 386 59 11
Fax: (2) 02 386 58 71
Email: gem1@idsc.net.eg
Web: www.gem.gov.eg

Registration

From 7 January to 7 April 2002. Registration may be made by mail, e-mail, web site online form, fax, or in person at the Giza address. Fees for registration are $300US + $50US for international shipping and handling, to be paid by bank transfer to the below address. Bank charges to be paid by applicants. The registration fees are non-refundable under any circumstance.

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Account Holder:	The Supreme Council of Antiquities
Account number for Egyptian Pounds (LE):	101/37/110200/00/4
Account number for US Dollars($):	101/11/018872/00/0
Bank Telephone Number:	(2) 02 391 3682
Bank Fax Number:	(2) 02 391 9779

Application

Applications for registration must arrive no later than 18:00h (+2 GMT) on 7 April 2002. Applications are to be accompanied by:

- Complete registration form with name, address, and country of origin of the architect or team of architects applying.
- Documentative evidence of the architect's or team leader's right to exercise the profession in his or her own country.
- Copy of bank receipt confirming fee payment.

Competition Brief and all related documents will be delivered during the month of April 2002 to the exact address of the registered participants. All correspondence and inquiries should be addressed to the Technical Committee Coordinator at the Giza address and/or e-mail address. Deadline for submission of the First Phase documents (two copies) shall be 12:00h (+2 GMT) 17 August 2002 at the Giza address.

Emblem of Eternity

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**The American Institute
of Steel Construction, Inc.
presents:**

Benefits of Staggered Truss Systems in Multi-Story Residential and Other Applications

Low floor-to-floor heights can be combined with flexible floor plans through the use of a staggered truss structural steel framing system.

First developed in the 1960s, the staggered truss system is now experiencing a renaissance, with a growing number of hotels, apartment buildings, dormitories, office buildings and even hospitals using this innovative and flexible system—ranging from an Embassy Suites hotel in New York City designed by Perkins Eastman Architects to the Baruch College Academic Center designed by Kohn Pedersen Fox Associates.

AIA/ARCHITECTURAL RECORD
CONTINUING EDUCATION Series

Use the learning objectives below to focus your study as you read **BENEFITS OF STAGGERED TRUSS SYSTEMS IN MULTI-STORY RESIDENTIAL AND OTHER APPLICATIONS**. To earn one AIA/CES Learning Unit including one hour of health safety welfare credit, answer the questions on page 141, then follow the reporting instructions on page 194 or use the Continuing Education self report form located at *architecturalrecord.com*.

Learning Objectives

- Understand the design of the staggered truss structural system.
- Know the benefits of the staggered truss system design over other traditional concrete and steel structural designs.
- Understand how the staggered truss system provides an efficient structural system with floor-to-floor heights of as little as 8'-8".
- Review how the staggered truss system was used as an effective design solution in a hotel and a university case study.

The staggered truss structural system consists of story-high steel trusses placed on alternating column lines on each floor so that the long axis of one truss is always between the trusses on the floor below. Typically, a precast concrete hollow core plank floor system is utilized, with the planks spanning from the bottom chord of one truss to the top chord of the adjacent truss (see schematic). With precast plank floors, economy is achieved by "stretching" the plank to the greatest possible span. Eight-inch plank can span 30 feet, while 10-inch plank generally can be used to span up to 36 feet, depending on the loading condition.

While earlier staggered truss systems utilized channels for web diagonals and verticals, today most of the trusses are designed with hollow structural sections (HSS) for vertical and diagonal members because they are more structurally efficient and easier to fabricate. The trusses are fabricated with camber to compensate for dead load and are transported to the site, stored and then erected—generally in one piece.

The Resulting System Achieves:

- *Low floor-to-floor heights (typically, an 8'-8" floor-to-floor height is achieved)*
- *Large column-free spaces (as much as 60 feet in each direction with columns often only appearing on the perimeter of a structure)*
- *Increased design flexibility (especially for atrium placement and floor plans)*

Experience Reveals That Staggered Truss Systems Are:

- *Faster to erect than comparable concrete structures; and*
- *Reduce the weight of the superstructure, which results in substantial savings in foundation work.*

In addition, because the vertical loads are concentrated at a few column points, less foundation formwork is required. And as with precast concrete floors, a good quality concrete plank floor structure yields a dry, semi-finished ceiling that requires little or no finishing.

The staggered truss system offers one of the most cost-efficient framing options in part due to the project's scheduling considerations. Steel framing, including spandrel beams and precast floors, can generally be erected at a faster rate than traditional systems—and once two floors are erected, window installation can start and stay right behind the steel and floor erection. No time is lost in waiting for other trades, such as bricklayers, to start work. Except for foundations, topping slab, and grouting, all "wet" trades are eliminated.

The system works best for buildings in the five to 20-story range, there are several notable examples in the 30-40 story range, including the Trump Taj-Mahal in Atlantic City, the Renaissance Hotel in Nashville, and The Aladdin in Las Vegas. However, while the stiffness of the system provides the desired drift control for wind and earthquake loadings, staggered trusses systems may not be economical for projects above 20 stories in high-seismic regions due to the issue of diaphragm action of the plank system, though staggered truss designs may be used if other diaphragm systems are utilized. In some cases, cast-in-place topping slabs over pre-cast concrete planks that have been designed to act as the diaphragm have cracked along the edges of the precast elements and the welded wire fabric have fractured during earthquakes. However, untopped hollow-core plank diaphragms with grouted joints and chordes have performed satisfactorily in earthquakes and laboratory tests.

Fire resistance is another advantage, for several reasons. First, the steel is localized to the trusses, which only occur at every 58-to-70-feet on a floor, so the fireproofing operation can be completed efficiently. Furthermore, the trusses are typically placed within demising walls and it is possible that the necessary fire rating can be entirely by enclosing the trusses with gypsum wallboard. Finally, if spray-on protection is desired, the applied thickness can be kept to a minimum due to the compact nature of the truss elements.

In addition to saving their clients time and money, the staggered truss system provides architects with increased design flexibility. This flexibility translates into first-floor ballrooms, health clubs, restaurants and beautiful lobbies. And this flexibility extends to the layout of the back-of-house operations, a key concern for hotel developers.

Design Considerations

In many respects, designing a staggered truss system is simpler than a conventional steel-framed building. There are fewer structural drawings since there are fewer connections and most of the details are repeated. Detail drawings also are simplified. The main design consideration is the accommodation of shafts within the building that are independent of the trusses, since the framing system creates wall lines that differ from floor to floor. Also, it is important that the Mechanical/Electrical/Pluming (MEP) trades receive adequate information on the architectural drawings and that the lines of communication are kept open.

The key to attaining maximum cost efficiency from a staggered truss project is careful attention to planning and coordination. Early steel fabricator and concrete plank manufacturer involvement is critically important. Coordination between the two contractors is particularly important for such details as plank cut-outs, plank camber, plank bearing supports, and clearances for stud welding. It is often advantageous for the steel fabricator and plank supplier to be in direct contact.

CASE STUDY: Embassy Suites Hotel

Embassy Suites Hotel

Totaling approximately 617,000 sq.ft., the mixed-use Embassy Suites hotel development is among the largest of several newly built hotels in the business district adjoining New York's bustling Wall Street area. The L-shaped hotel is situated on a site measuring 62,500 sq. ft. and has two wings connected by a 9,200 sq. ft. east-west atrium with skylights and glass walls on its west. The development showcases a 463-room hotel, a 16' screen movie theater, a sizable retail complex and a 13-story-high, glass-walled public atrium forming a centerpiece that offers sweeping views of the Hudson River.

The functional needs of the project's components could not have been more diverse. Movie theaters require long clear spans of up to 60', with high floor-to-floor heights, typically 32' In contrast, hotels generally need short spans for rooms and low floor-to-floor heights, normally in the range of 8'-8" to 10' Retail spaces require somewhat more flexibility: they benefit from longer open spaces, however spans of 30' to 40' are generally acceptable.

Space usage also dictated the types of ceilings that had to be used in the project. As large-volume, high-occupancy spaces, movie theaters need a ceiling plenum for air and service distribution, as well as acoustic enhancement. Where as, hotel rooms are small, private spaces served by individual HVAC units. With bathrooms stacked vertically, piping is distributed inside the walls, while the bedroom ceiling is usually the soffit of the floor slab above with a directly applied surface finish. Retail spaces will frequently use a ceiling plenum for service distribution and the installation of special features.

Certain pieces of conventional wisdom are generally applied when choosing structural systems for a project, most of them dependent on the project's location and uses. For a New York mixed-use project like Embassy Suites, such wisdom would point to a concrete flat-slab system for the hotel and a steel-framed structure for the movie theaters. However, it soon became clear that if the project was to survive the designers needed to throw a few traditions out the window.

During the concept development, the project's budget estimate showed a very tight pro-forma. Unless the construction cost per square foot could be reduced, the project would not be financially feasible. The conceptual cost estimate, based on construction costs for similar projects built in the New York City market, called for a cast-in-place concrete system. The design team was charged with the task of finding significant cost savings—and fresh ideas were needed.

Thornton Tomasetti Engineers, the project's structural engineers, proposed the use of a staggered truss system for the hotel combined with a conventional steel frame and composite slab-on-metal deck for the theater and retail components. Cost estimates by Bovis Lend Lease, the general contractor, confirmed the value of the cost savings to be in excess of $2 million. The team had found a viable and economic solution, but next needed to satisfy the client of the ability of the system to meet the program requirements while still providing the estimated cost savings.

Why is concrete flat slab so often the system of choice for hotel buildings? Flat-slab construction provides several important benefits, including shallow uniform thickness of the structure facilitates lower floor-to-floor heights, reducing the cost of the structure and the area of the exterior wall, elimination of the need for hung ceilings, and a satisfactory fire rating for the floor construction.

The staggered-truss system used for the Embassy Suites Hotel had many of the same advantages:

- *The Filigree precast plank floor is a uniform 8", providing low floor-to-floor heights.*
- *The soffit of the planks can be finished in the same way as the concrete slabs, without hung ceilings.*
- *The Filigree precast plank satisfies fire rating of the floor system.*

According to Jonathan Stark, Perkins Eastman Architects, P.C., "Staggered truss actually reduces the flexibility of the building layout. But in a project such as a hotel that does not need the flexibility, it did allow for column-free space in each hotel room. Each hotel room had quite a different layout and detail due to the use of staggered truss with the addition of 6" to 10" of space."

The decision to use the staggered truss system was, in the end, a financial judgment. For the specific project and site under evaluation, the steel system offered significant advantages:

- *The weight of the steel and plank structure is approximately 20% less than that of an equivalent concrete frame. Since the project site is located on land that was filled/reclaimed in the 1960s, deep end-bearing-pile foundations were required to support the structure. With depth-to-rock averaging 80', the reduction in foundation loads resulted in a savings of approximately $1 million in foundation costs.*
- *Reduced dead load translates directly into reduced seismic load. Since the 14-story building's lateral systems were governed by seismic design, the 25% reduction in lateral design forces resulted in further cost savings.*

In addition, the mixed-use nature of the project strengthened the case for an all-steel-framed structure. Composite steel framing with slab on metal deck was a logical, cost-effective choice for the theater clear spans of 40 to 60'. For retail uses, steel framing provides maximum flexibility, permitting easy modification when tenants change. The steel weight averaged 7 psf for the hotel and 15 psf for the theaters. In a concrete structure, transfer girders would have been necessary to achieve the longer, more open spans needed at the lower public spaces.

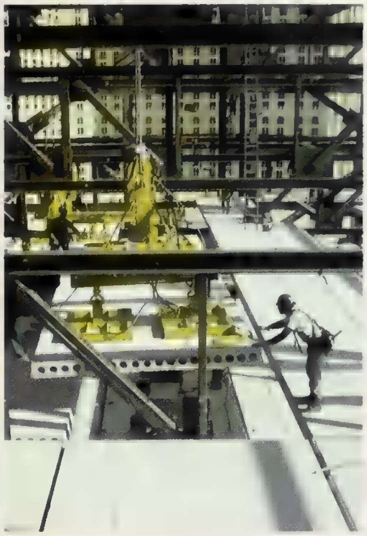
Story-deep staggered trusses span transversely across the narrow dimension of each hotel wing. The truss spacing matches the suite partition locations, typically varying from 26 to 30' on center. Staggering occurs on alternate lines from one floor to the next. The 8" deep precast Filigree planks span from the top chord of one truss to the bottom chord of the adjacent truss. Since the trusses are completely encapsulated by the partition walls of the hotel, minimal width truss members are desirable. Rectangular HSS sections were determined to be the most efficient.

Provision was made within the footprint of each theater for the tenant fit-out of a full stadium seating theater. Partial mezzanine levels were provided, framed in structural steel, approximately 19' above the floor, to house projection booths and provide secondary means of egress. The stadium seating was supported on light gage steel joists and stud walls sitting on top of the theater slabs. This solution permitted the design and construction of the theater fit-out to lag behind the base building construction and provided an economical framing method for the stadium-seating component.

Meeting the objectives of a client—whether they are related to time, cost or function—is the primary goal of every project. In the case of the Embassy Suites Hotel development, the client's cost requirements determined whether or not the project got built at all. In this restrictive circumstance, engineers decided to ignore everything that was known about typical residential construction in New York City in favor of the staggered steel-truss system. The result was exactly what they—and their client—were looking for. ■

CASE STUDY: Baruch College

Vierendeel openings in story-high truss.

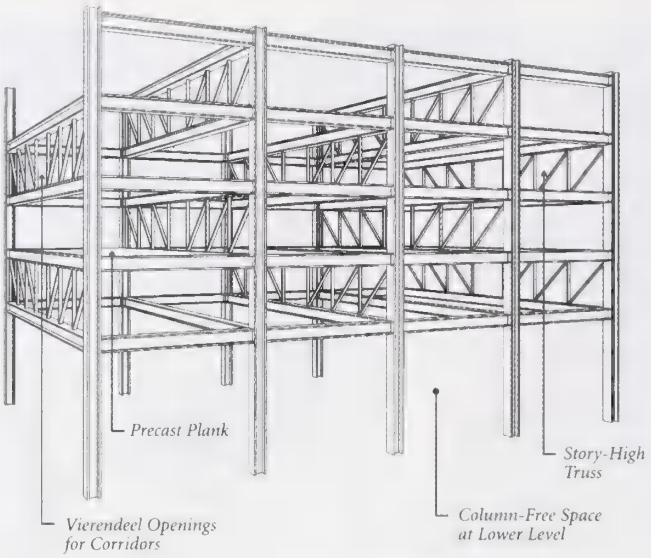

Placement of pre-cast plank flooring.

While staggered truss systems have most often been used on multi-story residential buildings, they are now being used on a growing number of non-residential structures, including the new Baruch College Academic Center. Sited on a mid-town Manhattan block, the Center is an urban campus in three dimensions. The building is organized around an atrium that extends upward, 15 stories from the ground level, changing shape as it rises. Below grade rests a world-class athletic facility with two gymnasiums, a pool and racquetball courts. Also located below grade are a performing arts center with an auditorium, a theater and a student center. The academic spaces reside on the upper floors and include classrooms, computer labs, lecture halls, faculty offices and lounge. Elevators located on one end of the atrium and a multitude of stairways provide vertical transportation for the three thousand students that will pass through the building every day. The academic spaces are arranged so that students will use the elevators only when arriving and generally be able to use the stairs, climbing or descending no more than two stories between their classes and offices during the day.

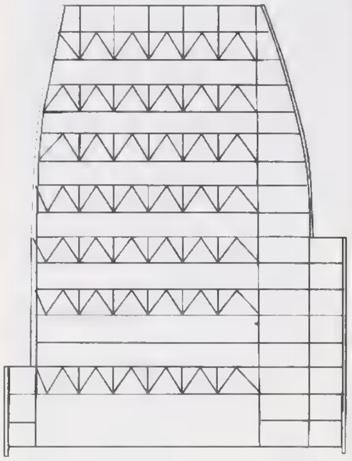
The atrium looks as if it had followed the path of a lightning bolt that cut through the building. It penetrates the south façade of the building on the upper floors and extends down to the ground floor on the north side, allowing daylight to flood the center of the 200' by 330' building. Both the north and south sides of the building have vertically curved facades that not only add to the structural complexity of the building but introduce visual excitement as well.

The site occupies a 197' blockfront on Lexington Avenue between 23rd Street and 24th Street and extends 336' east toward Third Avenue. The western end of the site is excavated 42' down to provide three levels below grade. An Olympic size swimming pool in the central part of the site extends a further nine feet below the lowest basement. The eastern end of the site, only excavated for two basement levels, avoids heavy rock excavation in the vicinity of an existing residential building. In general, all footings are on rock with a 40-ton capacity except in the eastern end of the site where the bearing capacity equals 20 tons per sq. ft. Recognizing the sensitivity of the neighbors, vibration monitoring of the adjacent properties was instituted during the rock excavation phase of the project. Ground water is located about 45' below grade, which places it below the lowest basement but above the bottom of the pool.

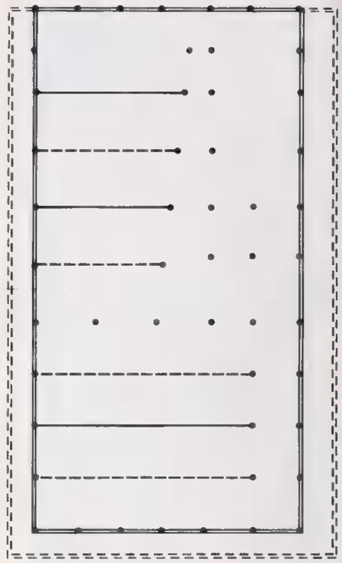
To accommodate the various aspects of the program, structural spans varied from 30' to 120' and were distributed both in plan and vertically throughout the building. Given that steel would provide the only solution for this problem, a conventional approach would have been to design girders or trusses above th longest span spaces. Such a solution was explored in the preliminary desig


Precast Plank
Story-High Truss
Column-Free Space at Lower Level
Vierendeel Openings for Corridors

Schematic view of staggered truss framing system.



Section view of Baruch College.



Plan view of staggered truss locations.

phase of the project and showed a severe penalty in tonnage of steel, therefore increasing the cost. Since the $168 million budget for the project was fixed and very tight for an academic building of 785,000-sq. ft., another approach was needed.

Structural engineer Weidlinger Associates proposed reorganizing the building to achieve an efficient structure that included staggered trusses to accommodate the longest span spaces. With only minor revisions to the original layout, the architects, KPF, placed the longest span spaces on the east side of the building. The relatively smaller theatre and auditorium were placed on the west side, which has a typical steel beam and concrete slab on metal deck framing system. Classrooms and offices, positioned throughout the building, shifted as needed to accommodate the new plan.

The principal advantage of using a staggered truss system lies in the ability to create wide-open spaces within a restricted floor-to-floor height. The challenge is to coordinate the existence of diagonal members crossing the space along the truss lines. To overcome this challenge, Vierendeel panels (which utilize vertical instead of diagonal members within the truss) allowed corridors to pass through. Since such Vierendeel panels introduce bending in the truss members, a penalty of increased steel weight occurs. To minimize this effect, the Vierendeel panels were positioned as close to the center of the truss as possible where the bending effect is the least. In addition to the staggered trusses on the east end of the building, numerous other isolated trusses satisfy specific planning requirements. For instance, a two-story high truss between the fourth and sixth floors carries the loads of the two floors below it with a hanger system and also supports the floors up to the penthouse above. Since this truss is on the curved façade of the building, it is sloped to match the façade contours. There are other trusses at the ground floor over the pool, the gym and the theatre. In all, the project includes 20 trusses, most of which are a story high and 120' long. To get these story high trusses into the field, a full trial assembly was done after fabrication before the trusses were broken down, shipped via truck, and then welded back together in the field.

Since the building's structural grid is so irregular, providing lateral force resistance against wind and seismic forces proved to be a challenge. In the east-west direction, the staggered trusses provided a substantial portion of the lateral force resistance. In the north-south direction, vertical braced frames were introduced for lateral stiffness. But, as nothing in this structure is straightforward, the position of the atrium that virtually cuts the building in half required the interaction through the floor diaphragms to distribute the lateral force around the atrium.

Finally, the sloped faces of the north and south facades above the sixth and eighth floors respectively, introduced horizontal forces that had to be resisted by the vertical bracing system.

To support the façade of the building that includes masonry and metal panels, girts were placed outside the columns at a vertical spacing dictated by the requirements of the panels.

The imaginative application of the staggered truss framing system to this structure allowed the owners to combine their varied program needs into a mixed-use structure, maximizing their investment. ■

ADDITIONAL READING: Click for this...

As part of this CES learning activity, readers should also spend approximately 15 minutes reviewing AISC's 17-page multifamily residential brochure, which can be found at:

www.aisc.org/multistory.html

(if you don't have web access, please call 312.670.5433 to have a brochure sent to you). The brochure provides additional information on using the staggered truss system as well as information on alternative steel systems for multifamily residential applications. Compare the benefits and features of the staggered truss system with the girder-slab system, in-wall beam structural steel framing system, beam & open web joist structural steel framing system and integrated steel-precast composite framing system. **Note: Questions pertaining to online material will be included in the test questions to be answered.**

SUMMARY

The staggered truss system is an efficient and inexpensive alternative to traditional concrete construction for residential and other low-floor-to-floor-height systems, including poured-in-place and precast. The system, which offers floor-to-floor heights as low as 8'-8", consists of alternating story-high steel trusses with concrete plank floors. In addition to potential cost savings, the system also offers faster erection and more flexible floor layout than is possible with traditional systems. Finally, large column-free spaces can be constructed on the first floor to enhance lobby design or even for use as a club or fitness center.

Using the staggered truss system allows an architect to save their client both time and money, while producing a structure with more flexible floor plans—including the opportunity to substantially renovate and redesign the floor plan after the building is complete.

BENEFITS OF A STAGGERED-TRUSS SYSTEM

- Viable solution for low floor-to-floor heights (typically, an 8'-8" floor-to-floor height is achieved)
- Large column-free spaces (as much as 60 feet in each direction with columns often only appearing on the perimeter of a structure)
- Increased design flexibility due to need for fewer columns (especially for atrium placement and floor plans)
- Faster to erect than comparable concrete structures and ability to erect framing in winter months speeds construction
- Reduced weight of the superstructure results in substantial savings in foundation work
- Less foundation formwork is required because the vertical loads are concentrated at a few column points
- Good quality concrete plank floor structure yields a dry, semi-finished ceiling that requires little or no finishing
- The need for applied fireproofing is reduced, which saves additional time and cost

Learning Objectives

- Understand the design of the staggered truss structural system.
- Know the benefits of the staggered truss system design over other traditional concrete and steel structural designs.
- Understand how the staggered truss system provides an efficient structural system with floor-to-floor heights of as little as 8'-8".
- Review how the staggered truss system was used as an effective design solution in a hotel and a university case study.

Instructions

Refer to the learning objectives above. Complete the questions below. Fill out the self report form on page 194 and submit it or use the Continuing Education self report form on *Record's* website—*architecturalrecord.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

Questions

Q: 1. Typically, staggered truss systems allows for floor-to-floor heights as little as:
A: a: 8'
b: 8' 8"
c: 9' 8"
d: 10'

Q: 2. A benefit of the staggered truss systems over a precast concrete framing system are:
A: a: large column-free space
b: low floor-to-floor heights
c: ability to erect in winter months
d: semi-finished ceilings

Q: 3. In the Embassy Suites Hotel case study, the advantage of a staggered truss system that led to the most significant cost savings was due to:
A: a: filigree precast plank satisfied fire rating of floor system.
b: soffit of the planks was finished without hung ceilings
c: filigree precast plank floor was a uniform 8"
d: weight of the steel and plank structure was less than equivalent concrete frame

Q: 4. A key to the design of the staggered truss system that achieves the low floor-to-floor heights is:
A: a: trusses fabricated with camber to compensate for dead load
b: after fabrication, trusses are transported to site, stored and generally erected in one piece.
c: store-high steel trusses placed on alternation column lines
d: vertical loads concentrated at a few column points

Q: 5. The increased flexibility and design options in the floor layout with a girder-slab steel framing system is due to:
A: a: elimination of need for immovable masonry bearing walls
b: interim structural steel girders placed within the plane of the precast plank
c: avoiding MEP interference problems
d: low-cost, 2 hour fire rating

Q: 6. Steel construction can enhance occupant satisfaction in a multi-story residential building due to:
A: a: low floor-to-floor heights
b: all weather construction
c: fewer pile foundations
d: more useable clear space

Q: 7. With Staggered Truss Systems less foundation formwork is required because:
A: a: vertical loads are concentrated at a few column points and the foundation loads are lower than with an equivalent concrete structure.
b: trusses are designed with hollow structural sections for vertical and diagonal members
c: planks span from the bottom chord of one truss to the top chord of the adjacent truss.
d: trusses are fabricated with camber and are transported to the site, stored and erected generally in one piece.

Q: 8. The key to obtaining maximum cost efficiency from a staggered truss project is:
A: a: need for fewer columns
b: reduction of less foundation formwork
c: careful attention to planning and coordination
d: space for MEP systems while reducing floor-to-floor heights

Q: 9. The Baruch College Academic Center, as well as most staggered truss projects, use Vierendeel panels to overcome the challenge of:
A: a: providing openings for doorways.
b: carrying the weight loads of the two floors below a truss
c: providing lateral force resistance against wind and seismic forces
d: supporting the façade of the building

Q: 10. With the staggered truss system, the need for applied fireproofing is reduced because:
A: a: the steel is localized to the trusses
b: the trusses are typically placed within demising walls
c: of the compact nature of the truss elements
d: of alternating column lines on each floor

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In addition to the new buildings constructed by Turner each year, the company provides services on more than 1,500 renovation projects. These projects are completed mostly by Turner's Interiors or Special Projects Division. These groups perform highly finished tenant fit-out and renovation work – for law firms, restaurants, schools, corporate and other clients – and build smaller free-standing structures. Operating as specialized units in Turner offices the Special Projects/Interiors group make Turner the largest small contractor in the United States.

Turner

Building the Future

USG *Presents*

LIFE SAFETY DESIGN:
Specifying Fire-Rated Assemblies

by: *Rich Kaczkowski*
PROGRAM MANAGER, CONSTRUCTION SYSTEMS LABORATORY
USG RESEARCH & TECHNOLOGY CENTER
Nestor Sanchez
ARCHITECTURAL SYSTEMS MANAGER, UNITED STATES GYPSUM COMPANY

It goes without saying that life safety in building design is of paramount importance. However, because the standards and codes that regulate life safety design are continually evolving and improving, it is often difficult for architects to stay abreast of the latest requirements, systems and design specifications.

While life safety encompasses everything from personnel security to blast resistance to redundant protection against structural collapse, the core life safety issues still revolve largely around fire containment and control. Proper design of interior wall and floor/ceiling assemblies is an essential component of fire-resistant construction and, as such, a review of the fundamental specification principals behind fire-rated assembly design is timely and important.

AIA/ARCHITECTURAL RECORD
CONTINUING EDUCATION Series

Use the learning objectives below to focus your study as you read **LIFE SAFETY DESIGN: SPECIFYING FIRE-RATED ASSEMBLIES**. To earn one AIA/CES Learning Unit including one hour of health safety welfare credit, answer the questions on page 147, then follow the reporting instructions on page 194 or use the Continuing Education self report form located at *architecturalrecord.com*.

Learning Objectives:

- Understand why fire-rated wall and floor/ceiling assemblies must be specified as systems;
- Realize the role that gypsum panels play in fire-rated systems and know how the panels perform under fire conditions;
- Understand the basic criteria for specifying firestopping systems, gypsum cavity walls and area separation walls.

The Systems Approach

A systems approach is a key principle behind successful fire-resistant wall and floor/ceiling design. These assemblies must be viewed and specified as complete systems. Why? It has long been recognized that the fire resistance of an assembly is strongly influenced by the interaction and compatibility of the individual components comprising it. Building codes require that wall and floor/ceiling assemblies be tested by independent bodies, such as Underwriters Laboratories Inc. (UL), and that the resulting rating be assigned to the complete system. This systems approach best reflects the reality of how an assembly performs when exposed to fire.

A wall system, for instance, may consist of products such as gypsum panels, framing members, fasteners, joint compound and finish treatment. The system may also include penetrants (e.g., pipe or conduit) breaching the wall that must be compensated for through the proper application of firestopping materials. The performance of the wall is dependent on how well these various products and materials function as an integrated wall assembly, or system. Performance will vary depending on:

- *the type of gypsum panel used;*
- *how the panels are applied (horizontally or vertically);*
- *the type and spacing of framing;*
- *the type and spacing of fasteners;*
- *the size, type and number of penetrations;*
- *where and how the partition intersects with a floor/ceiling assembly;*
- *and a variety of other issues.*

Individual products that are included as part of a system cannot compensate for any deficiencies in the overall system design. For instance, specifying an enhanced fire-resistant gypsum panel will not compensate for using an undersized stud or an inadequate number of fasteners.

Proper installation of a fire-rated assembly is also important. Good construction practices, executed in accordance with manufacturers' recommendations, are needed to ensure that the assembly built in the field is representative of the one tested.

The type of fire rating required for a specific partition or assembly is further impacted by a number of additional building design issues. Are the walls load-bearing or non-load-bearing? Are automatic sprinklers installed in the building? What is the anticipated building occupancy? How tall is the building? What is the proximity of the building to neighboring lot lines? All of these factors and others affect the fire-resistant rating that a partition or assembly must achieve.

In view of all these issues, it's no wonder that fire-resistant assembly design and construction is one of the more complex issues that architects and specifiers face on a day-to-day basis.

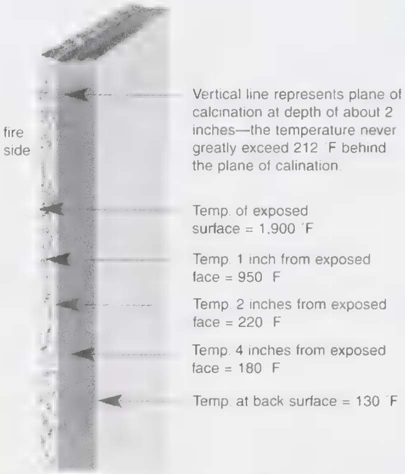

fire side
Vertical line represents plane of calcination at depth of about 2 inches—the temperature never greatly exceed 212 °F behind the plane of calination.
Temp. of exposed surface = 1,900 °F
Temp. 1 inch from exposed face = 950 °F
Temp. 2 inches from exposed face = 220 °F
Temp. 4 inches from exposed face = 180 °F
Temp. at back surface = 130 °F

Diagram of a 6-inch-thick structural mass illustrates the fire resistance of gypsum materials at the end of a test conducted by UL.

Gypsum Panels in Fire-Rated Assemblies

A basic starting point for clarifying fire-rated assembly specifications is to understand the performance attributes of the gypsum panels used in fire-resistant systems.

Gypsum ($CaSO_4 2H_2O$), the principal raw material present in gypsum panels, is a naturally fire-resistant mineral. It contains chemically combined water (approximately 20 percent by weight). When the face of a gypsum panel is exposed to fire, the heat converts a portion of the combined water to steam. This process dissipates the heat energy, keeping the opposite face of the panel relatively cool. The panel will effectively limit the transmission of heat as long as there is water left in the gypsum, or until the panel is breached.

Type X, or fire-resistant gypsum panels, contain additives such as chopped glass fiber that are incorporated into the gypsum core. When exposed to fire, these additives serve to bridge the gypsum crystals and reduce the size of cracks that form as the panel's water is converted to steam. This further prolongs the integrity of the panels, enabling them to continue to act as fire barriers and thus retard the passage of heat through the assembly.

A wall or floor/ceiling assembly fire test simply measures the time it takes for the system to reach the limiting criteria specified in Standard ASTM (the American Society for Testing and Materials) E119. For a wall assembly, the limiting criteria is defined as passage of flame through the wall, exceedance of a prescribed temperature rise on the unexposed face of the wall, the ability of the wall to carry a superimposed design load during the fire (for load-bearing walls), or projection of water through the assembly. Per ASTM C36, a 5/8-inch-thick Type X panel must provide not less than a one-hour fire resistance rating when applied in a single layer on each face of a load-bearing wood-stud wall when tested in accordance with ASTM E119. A 1/2-inch Type X panel must provide a 45-minute fire resistance rating on the same assembly.

A second type of fire-resistant gypsum panel, known as Type C (enhanced Type X), provides even better performance. In addition to glass fiber additives, Type C panels contain additives that expand in the presence of heat, somewhat compensating for the panel shrinkage resulting from the dehydration of the gypsum. This helps add stability to the core, significantly enhancing the panel's fire-resistant performance.

The distinction between Type X and Type C panels is important. Unless clearly stated by a recognized independent testing body such as UL, Type X and Type C panels are not interchangeable. A Type C panel may generally be substituted for a Type X panel of the same thickness, but the reverse is not true; nor can a 5/8-inch Type X panel be substituted for a 1/2-inch Type C panel without a case-specific evaluation. This is particularly important on floor/ceiling assemblies, where the enhanced Type C performance is deemed essential.

Another important factor to consider is that in fire-rated steel-stud wall assemblies gypsum panels must typically be installed with all board joints (i.e., the edges and ends of the panel) backed by framing. Horizontal joints must also be staggered, so they do not align on each side of the wall. The reason for this is that joints normally open as the wall is exposed to fire, allowing heat and flame to enter the cavity and pass through the wall. The backing and staggering of joints helps compensate for this condition.

However, there are exceptions to this. Some manufacturers' Type X panels have been extensively tested to demonstrate that they may be installed without the need for backing the horizontal board joints. Furthermore, the horizontal joints of these panels do not need to be staggered on opposite sides of the studs. Details on this specification are explained in UL Design Nos. U419 (for non-load-bearing walls) and U423 and U424 (load-bearing walls). These designs offer architects a one-stop source for meeting a wide range of fire-rated performance requirements for wall scheduling. Within single designs, they provide all the details required for specifying non-load-bearing walls up to four hours duration and load-bearing walls up to two hours duration.

Listings of many other fire-rated designs are available from UL's *Fire Resistance Directory*, from the Gypsum Association's *Fire Resistance Design Manual* and from individual gypsum board manufacturers.

However, the fact that tested results are available for thousands of different wall and floor/ceiling assemblies does not eliminate the "gray areas" that architects may encounter when specifying fire-resistant systems. When the issues are

Gypsum Area Separation Wall Installation

Steel H-stud slides in place over gypsum liner panels.

An aluminum breakaway clip is screw-attached to studs and framing. Under fire exposure, the clips break away, permitting the fire-damaged wall to fail while leaving the separation wall intact.

Steel C-runner fits over the studs and panels. A second C-runner is then screw-attached back to back to lower the runner to hold the next level of studs and liner panels.

unclear, it is advisable to contact either the gypsum board manufacturer or the independent testing agency for clarification. For complex projects, independent fire code consultants may be brought in to recommend specific approaches for meeting code requirements. Ultimately, however, it is the local building code officials who function as the final decision-makers. As such, it is best to involve code officials as early as possible in the design process. This often helps to keep small problems from developing into costly, complex issues.

Cavity Shaft Walls

From a life safety standpoint, cavity shaft walls are among the most important assemblies in any building. These engineered wall systems deliver critical fire resistance and structural integrity around stairwells, elevators and other building enclosures. During a fire, they provide a means for occupants to exit, while allowing access for rescue and fire-fighting personnel. They also offer a channel for communications, and enable the movement of power, water, fresh air and exhaust.

When creating cavity shaft wall specifications, tested system performance should be given top priority. While this premise holds true for virtually any fire-resistant design, it is especially critical for cavity shaft walls. When it comes to tested performance, no other type of cavity shaft wall system has undergone more extensive research, testing and refinement than gypsum panel wall systems.

Gypsum shaft wall systems provide fire ratings up to four hours. The assemblies are lightweight—a two-hour system weighs only approximately 9 pounds per square foot and is only $3^1/2$ inches thick. They install more quickly and cost effectively than "wet" cavity shaft walls, such as concrete block, and are erected from outside the shaft at each floor, eliminating the need for scaffolding. The shafts are enclosed early in the construction process and finished later, along with other interior partitions. Although various types of gypsum shaft wall systems are available, the most extensively tested and most widely used system is built using C-H studs. This stud profile combines a conventional "C" shape with an "H" pocket. A two-foot-wide gypsum liner panel is slid into the H pocket, requiring access from only one side of the wall. Conventional four-foot-wide Type X or Type C gypsum panels are screwed into place on the C side of the stud. The C-H studs, which are engaged to steel J-runners fastened to the floor and ceiling, produce a stronger wall and enable greater limiting heights compared to competing systems.

Gypsum liner panels have a fire-resistant core and are treated to resist moisture penetration. Multiple layers of gypsum panels can be applied to obtain fire ratings of up to four hours duration. If required per the specification, Type X or Type C gypsum plaster base panels may be used to accommodate a veneer plaster finish.

When specifying cavity shaft walls, look for tested performance that accurately represents actual job conditions. For instance, determine whether the cavity shaft system has been tested (per ASTM E152) with the type of elevator door that will be used. Review the system's tested performance for call-button and floor-indicator penetrations (per ASTM E119), and seek a system with UL-listed smoke and fire dampers.

To ensure system longevity, make sure that the manufacturer has not only conducted structural testing to develop limiting heights (the maximum wall span that may be built for a given design load without exceeding stress or deflection limits), but has tested the wall to a high number of repeated cycles or oscillations. Cavity shaft walls are subjected to both positive and negative pressures as elevator cabs rise and descend. Oscillation testing provides assurance that the walls will withstand this continual flexing throughout the life of the building.

FIRESTOPPING – AT A GLANCE

To achieve a desired fire rating for a partition or floor/ceiling assembly, all penetrations through that assembly must be treated with a firestopping material.

In order to achieve a desired fire-rating for a partition or floor/ceiling assembly, all penetrations through that assembly must be treated with a firestopping material that meets nationally recognized test standards (ASTM E814 or UL 1479). A *penetration* (also called a *through-penetration*) is a hole cut or formed through the entire assembly to permit passage of a penetrant, such as a pipe, conduit, duct or cable bundle. The *annular space*, or the gap between the opening in the assembly and the size of the penetrant, must be filled with a firestop sealant and, if needed, a forming material. The *forming material* (usually mineral wool insulation) serves as a backing or dam for the firestop sealant.

In addition to penetrations, firestopping materials are also used on joint systems between adjacent walls and/or floor/ceiling assemblies. UL identifies four types of joint systems: floor-to-floor, wall-to-wall, floor-to-wall and head-of-wall. The test criteria for all these building joints can be found in the Standard UL 2079, *Tests for Fire Resistance of Building Joint Systems.*

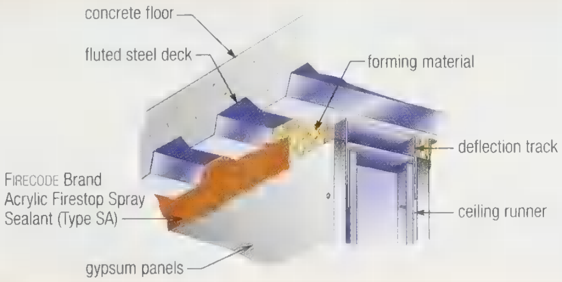
Generally speaking, there are three primary types of firestop sealant materials: mortar, caulk and intumescent.

Mortar-type firestops are applied wet over the forming material (when needed). They are available in either powder or ready-mixed formulations, and are usually the most economical option. They set or harden to form a strong, durable firestop, and are typically used in walls, floors and curtain wall slab edge conditions where strength and economy are required.

Caulk-type firestops are applied from a caulking tube or pail, or are spray-applied. They are easy to install, economical and flexible. They are typically used in dynamic joints in head-of-wall systems, as well as in certain floor and wall penetrations where movement is anticipated and flexibility is required.

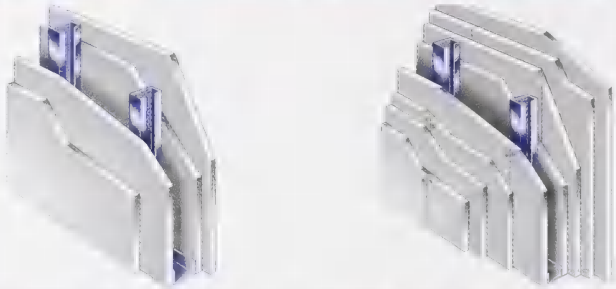
Intumescent-type firestops are specifically designed for use with plastic and insulated pipes, and other penetrants that will be burned or melted when exposed to fire.

Intumescent materials expand when exposed to heat to fill the cavity left by the damaged penetrant and thus prevent the passage of flame and smoke.



Head-of-wall intersections, where drywall partitions meet fluted steel decks, represent one of the more difficult firestopping applications for both specifiers and contractors. UL-classified head-of-wall systems are available that utilize sprayable firestopping products. These products provide a cost-efficient solution for head-of-wall applications with long construction joint runs.

UL DESIGN NUMBER U419:
A One-Stop Specification Source for Non-Load-Bearing Walls



UL Design Number U419 provides all the details required for specifying non-load-bearing walls with fire ratings from one to four hours. Shown here are a two-hour wall assembly (left) and a four-hour wall assembly.

Area Separation Walls

For multifamily construction, area separation walls (also known as "fire walls," "party walls" and "townhouse separation walls") serve to protect residents of adjacent units in townhouses and apartments in the event of a fire. They must provide both fire protection (usually two hours) and the needed structural stability to withstand the collapse of an adjacent structure without losing their integrity. Both concrete block and gypsum-based systems are commonly used as area separation walls.

A basic masonry area separation wall configuration consists of a non-load-bearing concrete block wall serving as a divider between wood frame construction on either side. Lateral support from the adjacent construction can be provided to stabilize the area separation wall at intermediate floors and roofs, but the lateral attachment must be designed so that the collapse of the adjacent construction in the event of fire will not cause the area separation wall to fall.

Gypsum-based area separation walls consist of 1-inch-thick gypsum liner panels used in conjunction with H-shaped steel studs and C-shaped runners to form thin, space-saving alternatives to concrete block. While meeting the same design requirements for fire and lateral load resistance, the drywall assemblies weight at least 50 percent less than masonry walls, install more quickly and require less floor space. The structural stability of gypsum-based area separation walls is achieved through the use of special aluminum clips that provide lateral support from the structure to the fire wall at intermediate floors and the roof. The clips also function as break-away fuses by melting or yielding from the rise in temperature on the fire side of the wall. The clips, which melt at 1,200 degrees F (a temperature reached relatively quickly in a severe fire), permit the fire-engulfed structure to collapse independently of the area separation wall.

Conclusion

The objectives of this learning activity were to enable you to understand why fire-rated wall and floor/ceiling assemblies must be specified as systems; realize the role that gypsum panels play in fire-rated systems and know how the panels perform under fire conditions; and understand the basic criteria for specifying firestopping systems, gypsum cavity shaft walls and area separation walls.

The overriding goal of all fire-resistant assembly design is to manage risk and thereby save lives and property in the event of a fire or other catastrophe. For decades, manufacturers, code officials, testing bodies, trade organizations and associations have worked together to help establish the best possible building design and testing protocols. The resulting fire-resistant systems, testing procedures and codes represent the state-of-the-art in life safety design and construction… and they ensure the safest possible living and working environments.

This collective expertise is available to any specifier for any building design. Use it by insisting on a systems approach when specifying materials and by relying on established testing criteria for all fire-resistant design.

Additional Articles and Information: CLICK FOR THIS

As part of this CES learning activity, you are required to read three additional articles relating to fire-resistant assembly design and specifications. Test questions will be included from this information. The articles are:

- **ASTM E119 Fire Endurance of Building Systems:** This article discusses the criteria and testing standards established by ASTM for use in testing assemblies for fire resistance. **To read the article on-line, go to the USG Corporation Web site (www.usg.com), link to "Design Solutions" (located on the top navigation bar), then link to "Fire Construction" (on the side navigation bar) and click on the "ASTM E119 Fire Endurance of Building Systems" link; or go directly to www.usg.com/Design_Solutions/2_2_fire_construct.asp and click on the same story link.** To obtain a fax copy of the article, call USG at 888-874-2450 and ask for the ASTM E119 Fire Endurance of Building Systems Web article.
- **ASTM E84 Surface Burning Characteristics of Building Materials:** This article provides a basic overview of the ASTM criteria used to determine the flame spread and smoke density ratings for an assembly design. **To read the article on-line, go to the USG Corporation Web site (www.usg.com), link to "Design Solutions" (located on the top navigation bar), then link to "Fire Construction" (on the side navigation bar) and click on the "ASTM E84 Surface Burning Characteristics of Building Materials" link; or go directly to www.usg.com/Design_Solutions/2_2_fire_construct.asp and click on the same story link.** To obtain a fax copy of the article, call USG at 888-874-2450 and ask for the ASTM E84 Surface Burning Characteristics of Building Materials Web article.
- **Building and Inspecting Smoke Barriers:** The article provides insights into how gypsum partition walls serve as effective smoke barriers and provides design criteria for creating smoke barriers. **To access the article on-line, go to the Gypsum Association Web site (www.gypsum.org) and click on the "Download Free Gypsum Association Publications" link at the top of the page.** After filling out the required form, download the "Building and Inspecting Smoke Barriers (GA-618-96)" PDF file. To obtain a fax copy of the article, call USG at 888-874-2450 and ask for Gypsum Association publication GA-618-96.

TECHNICAL INFORMATION SOURCES

Following are several leading reference and information sources about fire-rated design issues:

UNITED STATES GYPSUM COMPANY (WWW.USG.COM)

Because the company originally established most of the fire testing procedures currently used by UL, it can offer unique insights into testing standards and applications. U.S. Gypsum's technical support department, which includes eight architects and five engineers and 12 technical representatives, is the largest of all gypsum industry manufacturers. For technical assistance, call 800-USG-4YOU or write United States Gypsum Company, P.O. Box 806278, Chicago, IL 60680.

UNDERWRITERS LABORATORIES INC. (WWW.UL.COM)

To obtain a copy of the *UL Fire Resistance Directory*, call (847) 664-2899, or write to Underwriters Laboratories Inc., Publications Stock, 333 Pfingsten Road, Northbrook, IL 60062.

THE NATIONAL FIRE PROTECTION ASSOCIATION (WWW.NFPA.ORG)

The association provides a wide range of code and standard reports and research data. Contact the association by calling 617-770-3000 or write to the National Fire Protection Agency, P.O. Box 9101, Quincy, MA 02269.

THE GYPSUM ASSOCIATION (WWW.GYPSUM.ORG)

The trade association for the gypsum industry publishes a *Fire Resistance Design Manual* (GA-600) that provides a one-stop reference source for tested fire-resistant wall and floor/ceiling assembly designs. Contact the association by calling 202-289-5400, or write to the Gypsum Association, 810 First St., N.E., Suite 510, Washington DC 20002, or e-mail info@gypsum.org.

Learning Objectives

- Understand why fire-rated wall and floor/ceiling assemblies must be specified as systems;
- Realize the role that gypsum panels play in fire-rated systems and know how the panels perform under fire conditions;
- Understand the basic criteria for specifying firestopping systems, gypsum cavity walls and area separation walls.

Instructions

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Questions

Q: 1. Gypsum works as a natural fire-resistant material because:
A: a: It uses dry construction techniques
b: It can be used with light weight steel or wood framing
c: Heat energy is dissipated as the water turns to steam
d: The gypsum crystals form cracks when the panel's water is converted to steam.

Q: 2. A Type X, or fire-resistant gypsum panel, contains additives such as chopped glass fiber that serve to:
A: a: Reduce the number of fasteners required to attach the panel
b: Reduce the size of cracks that form as the panel's water is converted to steam
c: Eliminate the need for firestopping
d: Increase panel thickness.

Q: 3. Type C gypsum panels provide even better fire-resistant performance by:
A: a: Increasing the amount of gypsum present in the panel
b: Reducing the heat generated from fire as it comes into contact with the gypsum panel
c: Providing a fire-resistant surface that protects the gypsum core
d: Expanding in the presence of heat, compensating somewhat for the panel shrinkage resulting from the dehydration of the gypsum.

Q: 4. Which substitutions are generally acceptable?:
A: a: A Type X panel may be substituted for a Type C panel of the same thickness
b: A 5/8 inch Type X panel may always be substituted for a $^1/_2$ inch Type C panel
c: A Type C panel may be substituted for a Type X panel of the same thickness
d: No substitutions are ever allowed.

Q: 5. A benefit of gypsum-based area separation walls over basic masonry construction is:
A: a: They weigh at least 50 percent less
b: They provide lateral load resistance
c: The collapse of the adjacent construction due to fire will not cause the area separation wall to fail
d: They protect residents of adjacent units in the event of fire.

Q: 6. The structural stability of gypsum-based area separation walls is achieved through use of:
A: a: Large-sized gypsum panels
b: Break-away aluminum clips that provide lateral support from the structure to the firewall
c: Steel studs and runners
d: A non-load-bearing concrete block wall.

Q: 7. A benefit of intumescent-type firestop sealant material over other primary types is:
A: a: It provides flexibility of movement through the penetrations
b: It expands when exposed to heat to fill the cavity left by damaged penetrant
c: It is the most economical option available
d: It fills in the annular space of a penetration through assemblies.

Q: 8. What properties help gypsum board walls function as effective smoke barriers?:
A: a: They can be used on load-bearing and non-load-bearing wall assemblies
b: They can be applied in multiple layers
c: They install quickly and cost effectively
d: They are constructed to achieve a significant degree of fire resistance, sound isolation and reduction of air leakage.

Q: 9. Under ASTM E119, a hose stream test:
A: a: Measures an assembly's ability to withstand lateral impact from falling debris during the fire endurance period and before active fire suppression efforts begin
b: Is an indication of how long a room or zone can contain a fully developed blaze before it spreads to adjacent areas of the building
c: Determines fire-fighting practices or strategies at the fire site
d: Measures how quickly fire develops on an assembly's surface material once that material is exposed to flame.

Q: 10. Flame-spread ratings determined through ASTM E84:
A: a: Measure the transmission of heat through an assembly to the unexposed surface
b: Are measured by a hose stream test
c: Indicate how likely a fire is to move from its point of orign, and how fast.
d: Determine the firestopping material needed in through penetrations in fire-rated systems.

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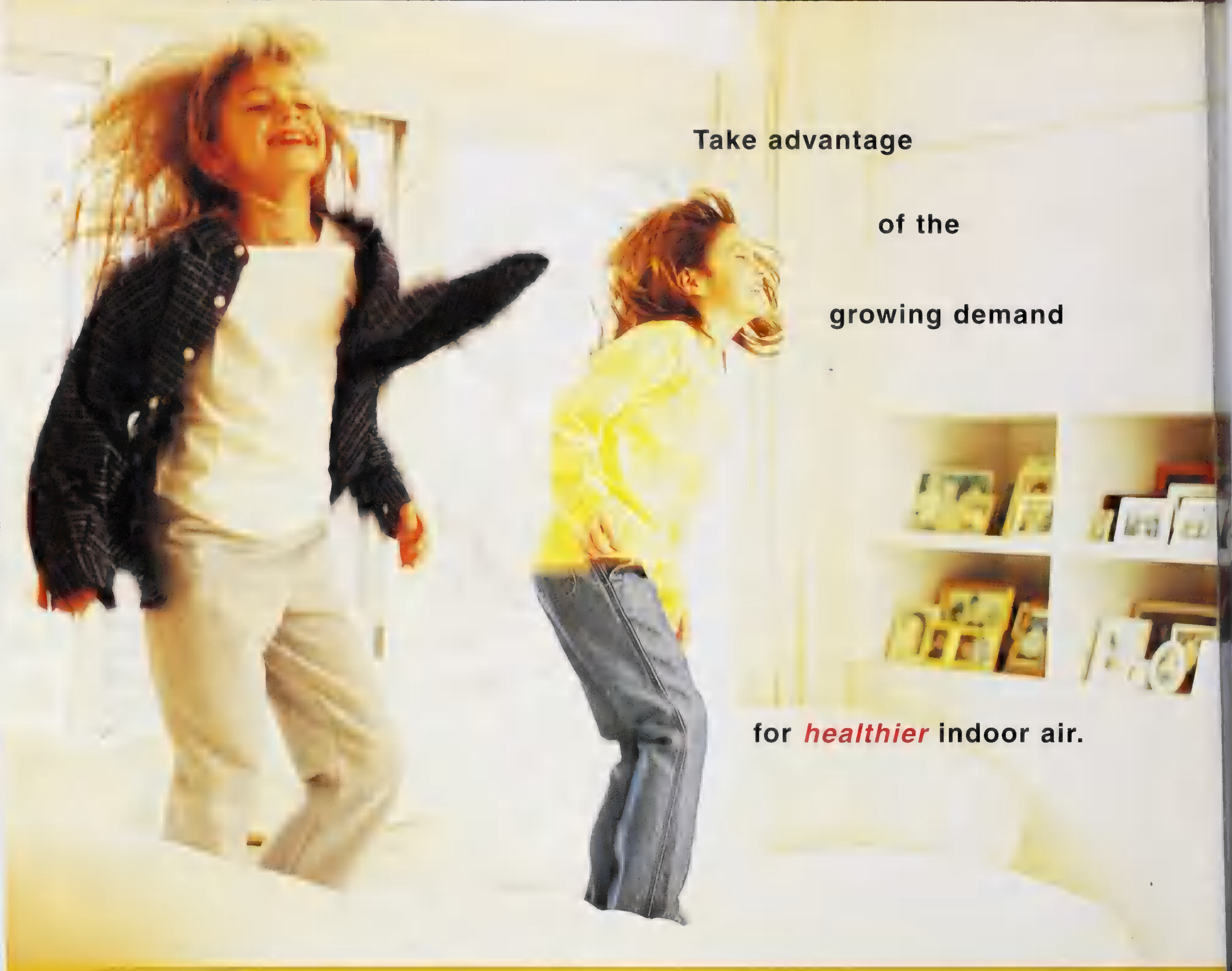

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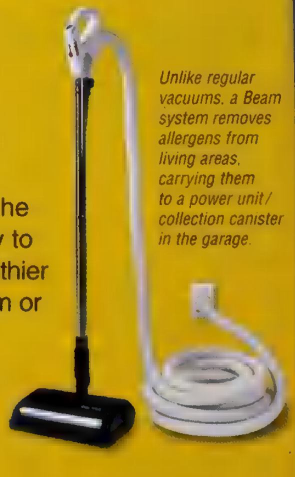

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Residential

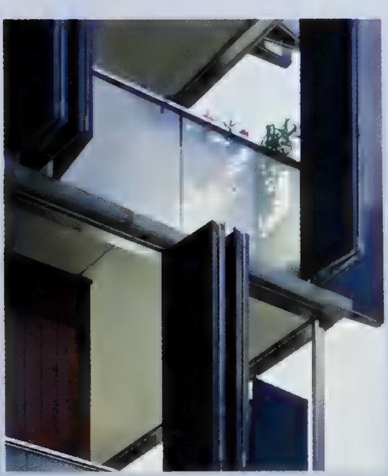
Housing projects that attest to beauty, humanity, and pride of place

Contrasting European and American low-income housing projects is a little like comparing apples to oranges—such important differences exist that the likeness is remote. In the U.S., HUD subsidizes housing but does not build or manage projects, leaving this to private developers and nonprofits, who often struggle to make it economically viable. This policy results in a severe shortage of housing, with, according to the U.S. Department of Health and Human Services, at least 600,000 homeless people and millions housed in squalor. But some bright lights out there are defying this problem, as evidenced in the pages that follow. Things are considerably different in Europe, where original and interesting design is encouraged, and substantial financial subsidies are dedicated to it. Housing is considered a basic privilege of the people—and government puts its money where its mouth is.

In Sweden, the city of Malmo clearly demonstrates its commitment to good design with the "City of Tomorrow," a residential district designed by a roster of notable architects to revitalize its urban center. This is where Moore Ruble Yudell has built Tango, a cheerful, 27-unit rental apartment complex modeled after a classic European city block. In Austria, elderly, unskilled workers and foreigners are the most frequent inhabitants of subsidized housing. This is the case at Innsbruck Housing, designed by Baumschlager & Eberle, where immigrants from around the world live together in highly dense proximity, a challenge the firm addresses in the research they conduct on their well-conceived designs.

In America, we have the classically defined SRO—single-room occupancy—housing, which has developed a bad rap from its skid-row roots. Rob Wellington Quigley's Campaige Place in Las Vegas challenges this reputation with an SRO development of distinct beauty and usefulness. Similar to Campaige in its urbanity is David Baker's SOMA Residences, which fill in a two-block desolation row south of Market Street in San Francisco, further energizing the promise of affluence that spread from the budding dot.com-company mania nearby. Here the emphasis is on fitting into existing neighborhoods—a common and important attribute of urban housing in the U.S.—rather than ripping them up.

The housing featured in this section is elegant, colorful, and purposeful. Although the European and American projects bear little resemblance, they all serve to increase the well-being and humanity of their residents. *Jane F. Kolleeny*

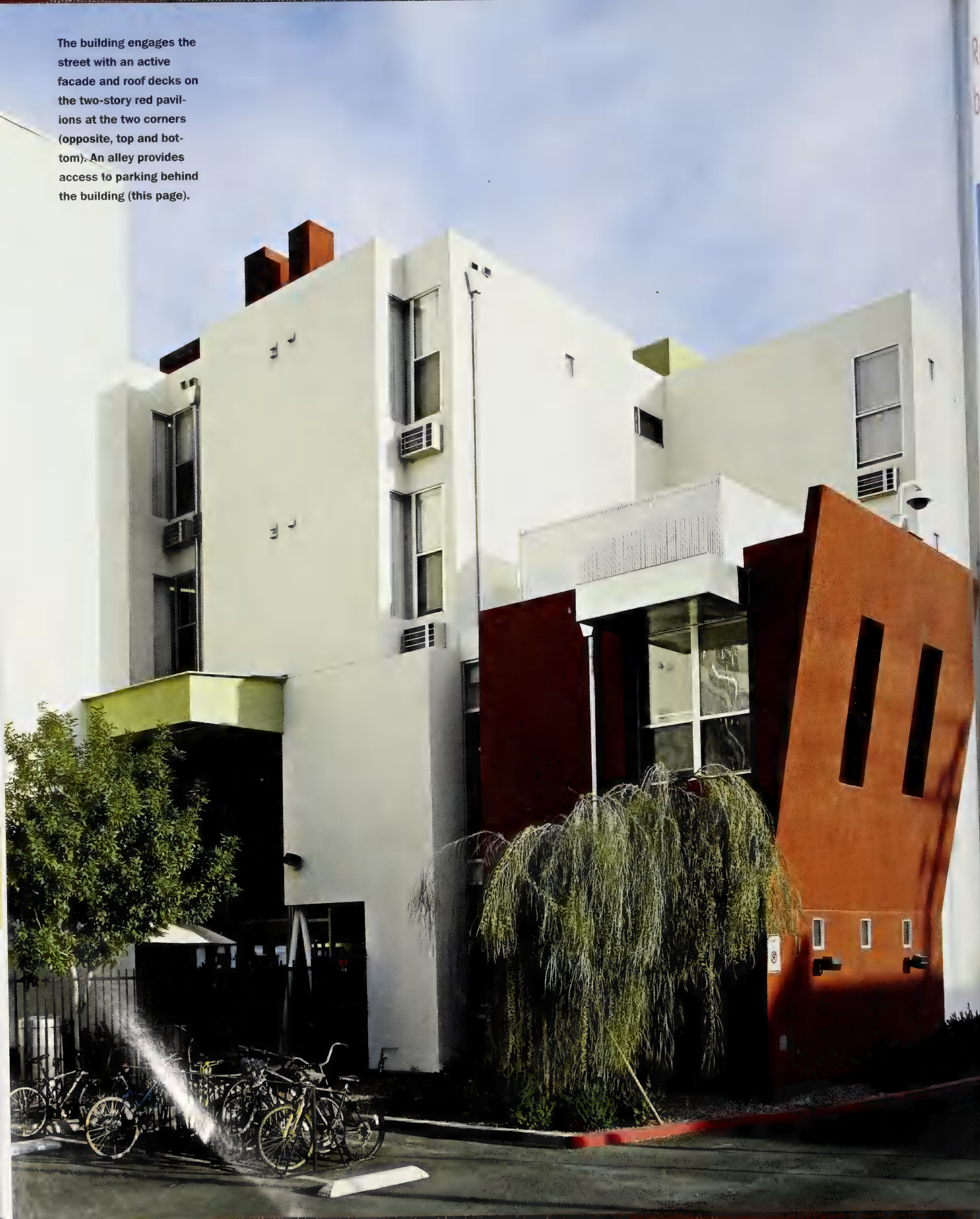


At Baumschlager & Eberle's Wohnen am Lohbach housing in Innsbruck, Austria, full-height copper shutters mounted on the balconies allow tenants to let in as much or as little of their surroundings as they want.

PHOTOGRAPHY: © EDUARD HEUBER

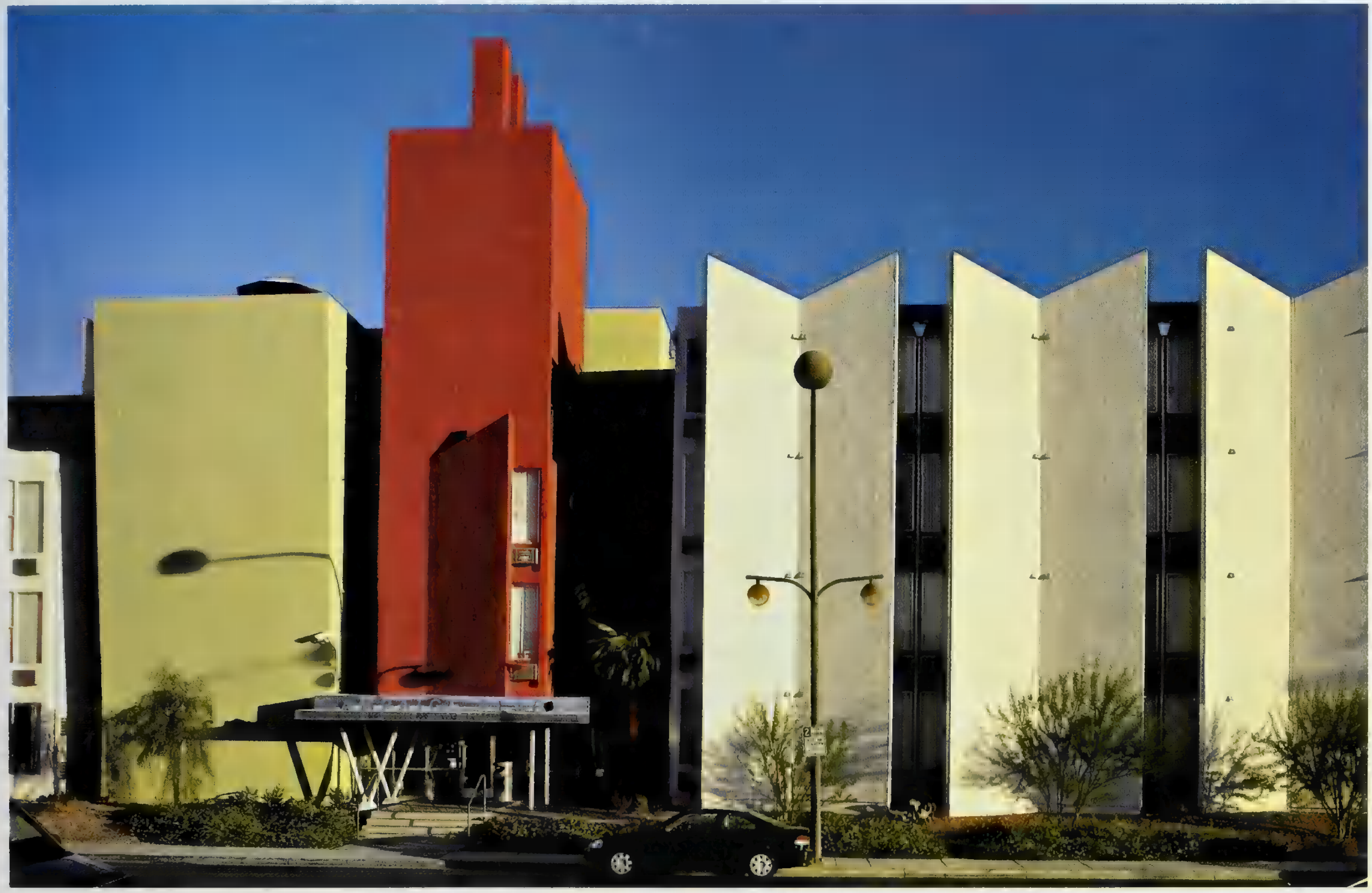
150 **Campaige Place, Las Vegas**
Rob Wellington Quigley
156 **Tango Building, Malmo**
Moore Ruble Yudell
160 **SOMA Residences, San Francisco**
David Baker Associates
164 **Wohnen am Lohbach, Innsbruck**
Baumschlager & Eberle
172 **Residential Products**

The building engages the street with an active facade and roof decks on the two-story red pavilions at the two corners (opposite, top and bottom). An alley provides access to parking behind the building (this page).



PHOTOGRAPHY: J. BRIGHTON NOING

Rob Wellington Quigley makes an **SRO hotel** a good bet for service workers in Las Vegas



By Clifford A. Pearson

For many years, developers around the country busily tore down single-room occupancy (SRO) hotels to put up fancy condominiums and apartment buildings. Most city officials and local residents were happy to see the old "flophouses" make way for more upscale housing. But now a few developers are discovering a market for new SROs, and officials in cities suffering a dearth of affordable housing are waving them on. Campaige Place, a 320-unit project just four seedy blocks from Las Vegas's old downtown, is part of this new wave of privately developed, for-profit SROs.

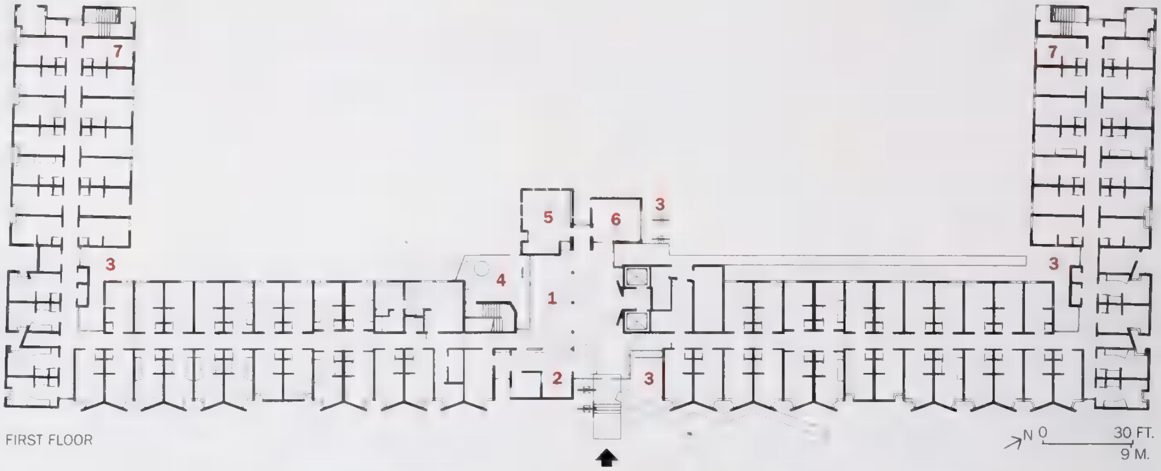
Targeted to workers in the service industry making less than $22,000 a year, Campaige Place is "an alternative to fleabag hotels on the outskirts of town," says Rob Wellington Quigley, FAIA, the project's architect. Within walking distance of bus routes and jobs at hotels, casinos, and restaurants, it is also an antidote to urban sprawl. Indeed, the Sierra Club named the project Nevada's best example of smart growth in 2000.

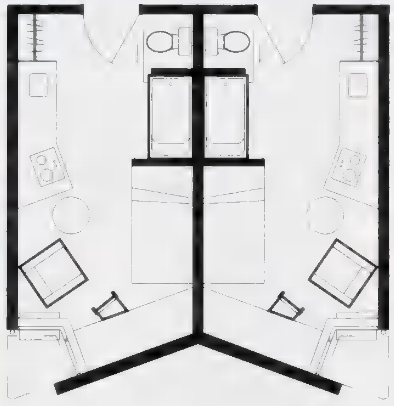
Taking advantage of a city/state program that uses tax-exempt bonds to provide low-interest financing and federal low-income housing

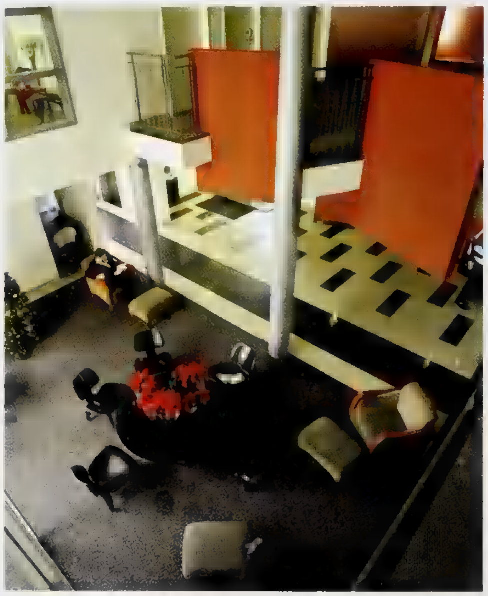
Project: *Campaige Place, Las Vegas*
Client: *The Tom Hom Group*
Architect: *Rob Wellington Quigley, FAIA—Rob Wellington Quigley, FAIA, partner; Robert Flock, project architect; Guillermo Tomaszewski, Wendell Shackelford, design team*
Engineers: *Flores, Lund & Mobayed (structural); P.R. Engineering (civil); Fashandi & Associates (plumbing); Stueven Engineering (mechanical); ABF Consulting Engineers (electrical)*
Construction management: *Williams CM*
General contractor: *Will Builder's Corporation*

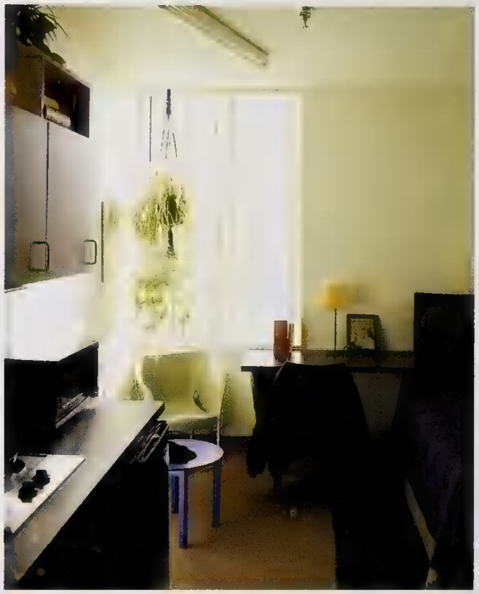
PHOTOGRAPHY: © BRIGHTON NOING

1. *Lobby*
2. *Front desk*
3. *Garden*
4. *Patio*
5. *Laundry*
6. *Gym*
7. *Apartment*









The apartments (far right) are small—about 200 square feet—but the public spaces, such as the two-story lobby (right) are more generous and designed to encourage interaction.

tax credits, the Tom Hom Group built the project for a total of $12 million (including $8 million for construction). Making the numbers work and getting all of the necessary approvals is always tough on SRO projects, says Will Newbern, president of the Tom Hom Group. But a courageous city councilman helped push the project forward.

To keep construction costs down, Quigley designed a simple, four-story, wood-frame structure clad in stucco and arranged the efficiency apartments along double-loaded corridors. The apartments, which average just 200 square feet (and rent for $475 to $573 a month), come with their own toilet, bathtub, bed, desk, two-burner stove, microwave oven, and television. Inexpensive materials such as aluminum windows, vinyl flooring, and gypsum board also keep the budget down. But like a skilled bridge player, Quigley knows when to play his few trump cards to maximize their impact. So he made the lobby a double-height space and placed a patio and a small garden right behind it to create a dynamic sequence of experiences. He also located common areas such as the laundry room and gym to encourage social interaction, an important element in a facility for single people.

Having worked with tight budgets on five SRO projects prior to this one, Quigley learned that often "inspiration is in the backyard." For example, a drive through residential areas of Las Vegas alerted him to the charms of chain-link fencing laced with PVC slats, a material he then used at Campaige Place as a colorful sun-and-wind-screening device for breezeways connecting the short wings of the building to the main facade.

While most SROs tend to look like boxes with windows, Quigley jazzed up the exterior of Campaige Place with bright colors, a couple of towers that serve as vertical accents to a block-long facade, and V-shaped walls that help shield apartments from the impact of the Nevada sun. At the two corners of the U-shaped building, the architect dropped the height to two stories to create 16-foot-square roof decks where residents can relax and keep watch over the street. "You want the building to become engaged with what's happening on the street," says Quigley. Such engagement with the surrounding area provides security in a transitional neighborhood without resorting to any kind of fortress architecture. So it is not surprising that the project has become a catalyst for redevelopment on nearby blocks, enticing the business community to take a fresh look at the area, says Quigley. ■

Sources

Aluminum storefront curtain wall: *Dan Bradley's Glass Shop*

Exterior stucco: *Bonanza Construction*

4-ply built-up roofing: *Dean Roofing*

Aluminum windows: *Better Bilt*

Chain-link fencing with PVC: *Fencing Specialists*

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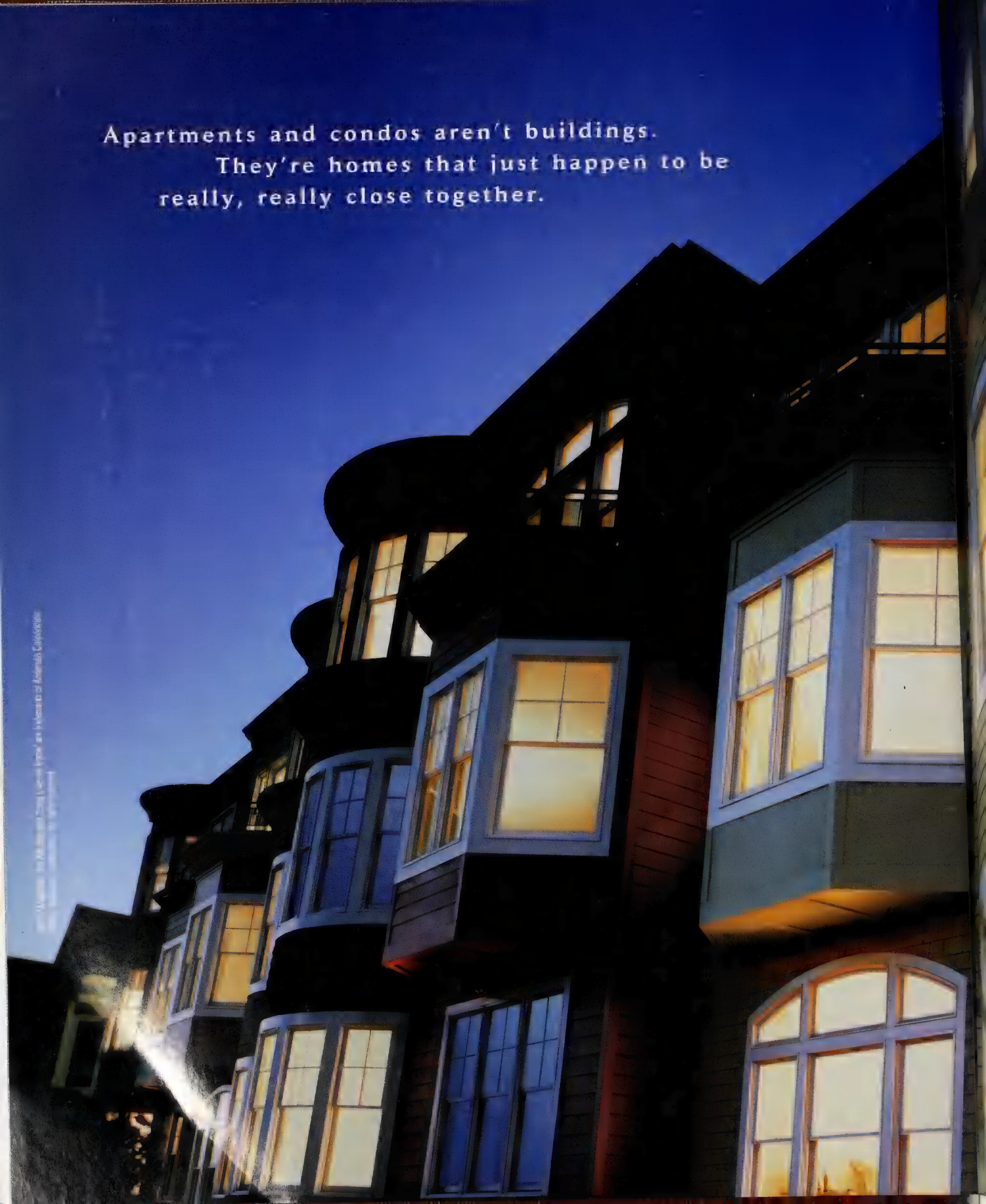
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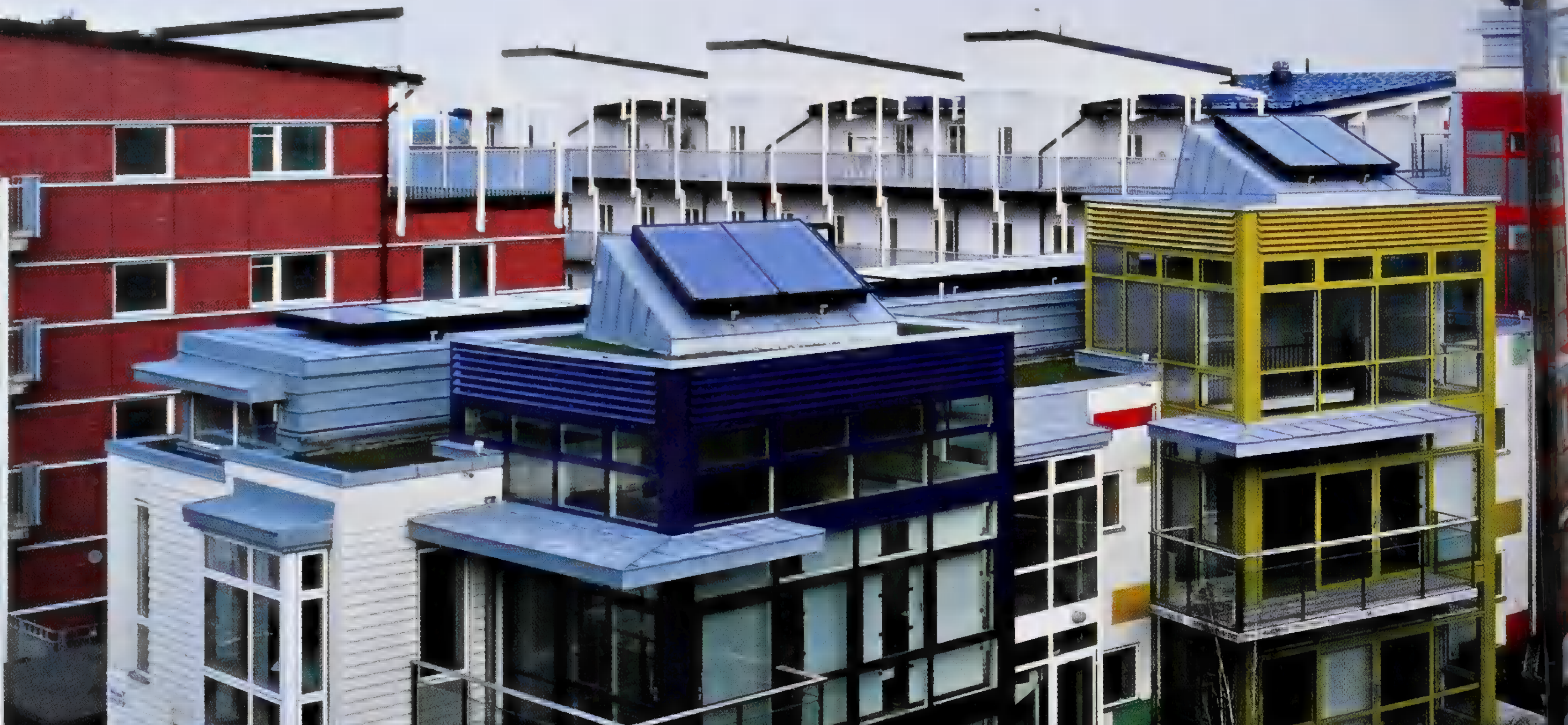
The **Tango complex** in Sweden combines a subdued street elevation and a courtyard brimming with color



Ranging in height from two to four stories, the glazed towers of the Tango complex project living rooms out into the garden (above and plan, right). Timber decking traverses marshlike plantings. An elevation facing a canal (right) places windows within a grid of concrete and zinc panels.

PHOTOGRAPHY: © WERNER HUTHMACHER

By William Weathersby, Jr.

At the southern tip of Sweden along the Öresund, the city of Malmö has reclaimed a brownfields site for a vast new housing development. A public/private joint venture teaming the local and national government, the local utility company, and a phalanx of developers and financial backers, the revitalization project extends the city's urban fabric out to a 1.9 million-square-foot sector formerly used for automobile production. To jump-start construction and attract rental interest, more than 500 residential units within 25 buildings were unveiled at the site last spring as part of an international housing exhibition called Bo01—City of Tomorrow. (Bo means "to live" in Swedish.) Complementing the apartment buildings were temporary exhibition halls and attractions that addressed environmental sustainability and electronic technology in residential construction.

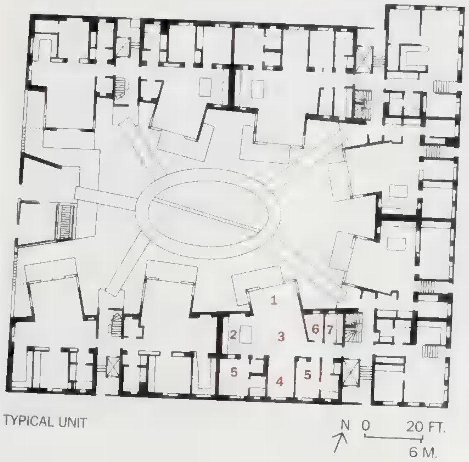
Within the new residential district, dubbed Boplatsen, a high-density, skewed grid of apartment buildings of four to six stories defines the streetscapes, with lower-rise town houses and garden apartments set within the central core and protected from strong waterfront winds. Parks, courtyards, and piazzas weave throughout the pedestrian-scaled site, with vehicular traffic largely restricted to perimeter areas.

Contributing editor William Weathersby, Jr., is a writer based in Westport, Conn. He regularly writes about residential architecture for RECORD.

Project: *Tango Building, Malmö, Sweden*

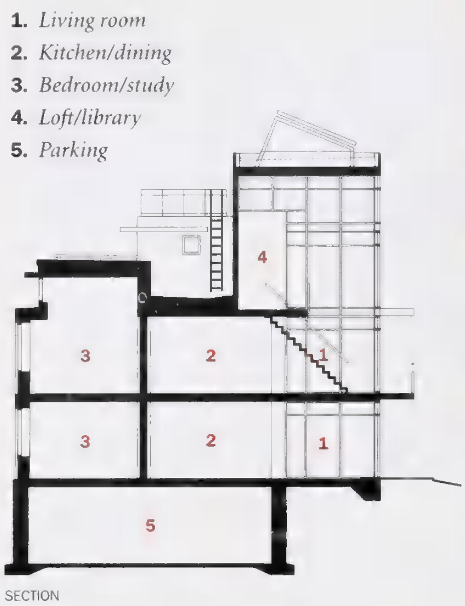
Architects: *SWECO FFNS; Moore Ruble Yudell Architects & Planners—John Ruble, FAIA, Buzz Yudell, FAIA, principal architects; James Mary O'Connor, project architect; Lisa Belian, Tony Tran, project team; Tina Beebe, Kaoru Orime, interior design*

Consultants: *Skanska Teknik (engineering); TAC (HVAC); Magle Teknisk Service (electrical)*

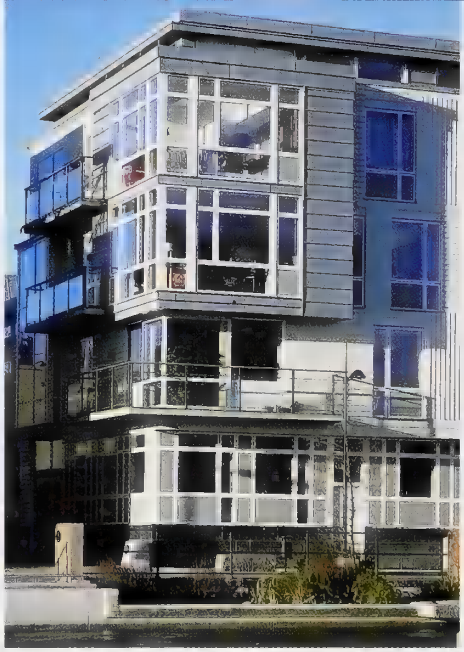


TYPICAL UNIT

1. *Living room*
2. *Kitchen*
3. *Dining*
4. *Study*
5. *Bedroom*
6. *Storage*
7. *Laundry*



SECTION



The organizers of *Bo01* commissioned a roster of mostly Scandinavian architects to design the apartment complexes, while a European village of detached houses showcases the work of participants from countries including Lithuania, Hungary, and Poland. In collaboration with the Swedish architect Bertil Öhrström of SWECO FFNS, Moore Ruble Yudell (MRY) was the sole American firm invited to join the project. MRY has established a history in Malmö. In a harborside suburb nearby, the firm designed the Potatisåkern apartment villas in 1993, where it is completing a new phase of development.

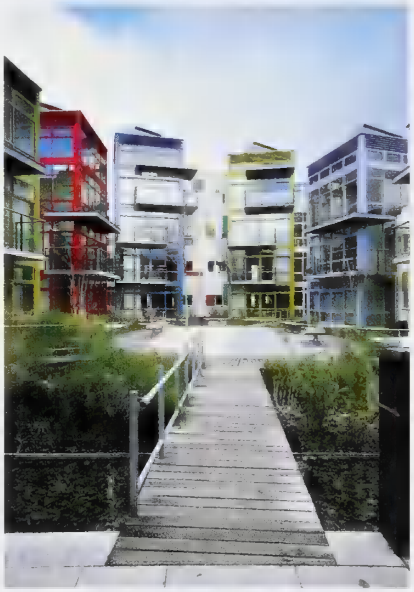
MRY's Tango complex at Boplatsen performs a dance of duality. The subdued massing and light colorations of the three perimeter facades relate to the urban fabric of the street, while elevations facing the courtyard twist and turn with color and angular geometry. "We were inspired by the form of the classic European city block," says principal architect John Ruble, FAIA. "The more reserved perimeter of the complex unfolds as a shared space configured for social interaction."

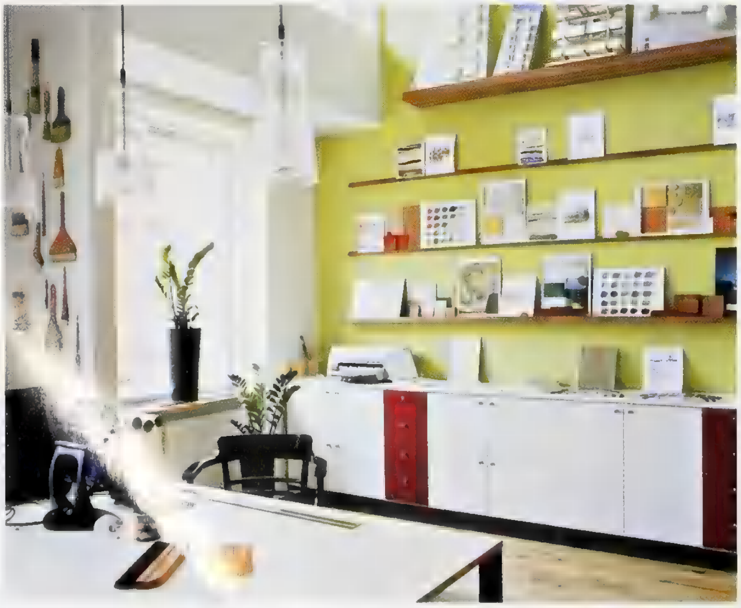
Tango houses 27 rental apartments—from 600-square-foot studios to 1,950-square-foot three-bedroom units—with no floor plan repeated. Expressing the varied layout of the stacked units, the street facades feature an asymmetrical arrangement of metal-framed windows set within a grid of precast concrete and zinc panels. Abstractly interpreting board-and-batten construction, a datum of alternating horizontal and vertical louvered panels modulate the seemingly random window placement. Roofs incorporate both solar panels and sedum plantings.

Facing the courtyard, eight glass towers from two to four floors in height project into the shared garden at varied angles "to create a sense of movement within a frame," says project architect James Mary O'Connor. The towers expand the footprint of each living room, opening interior spaces to light and garden views. (Some double-height living rooms feature clerestories.) At night, the fretted glass privacy screens of the towers cast a lanternlike glow within the courtyard. Expressed in bright heraldic colors, the staggered juxtaposition of the towers, with their interplay of balconies and patios, is meant to evoke "the quality of a medieval village," Ruble says.

The plan of each apartment is anchored by a "technology wall" clad in cherry wood that supports power and data cabling. Outfitted with modular components, the wall forms a core around which flexible room layouts can be configured. Room heights range from 8½ to 25 feet. Echoing the form of the building's towers, the kitchen stove vent is wrapped in translucent glass above a center island. Beech flooring, stone countertops, and triple-glazed windows are standard features. ■

Corner apartments encompass full-height bay windows framed with zinc panels (above right). Plantings in the courtyard represent the Öresund marshes with grasses, reeds, bamboo, and ferns (right). A model apartment (below) is outfitted with a design studio.





Sources

Curtain wall: *Uno Borgstrand*
Concrete: *Starka Betongindustrier*
Windows: *Velfac*
Roofing: *Weg Tec; Platexpressen*
Glazing, doors: *Alumin Arne Hansson*
Wood doors: *Swedoor*
Sliding doors: *Schüco International*
Locksets: *Aptus Elektronik*
Intelligent wall: *Träteknick*
Woodwork: *Snickerispecialisten*
Paints and stains: *EG Malerier*
Hardwood floors: *Junckers*
Tile: *Ceramic Casalgrande Padana, Bisazza*
Suspended ceiling: *Danogips*
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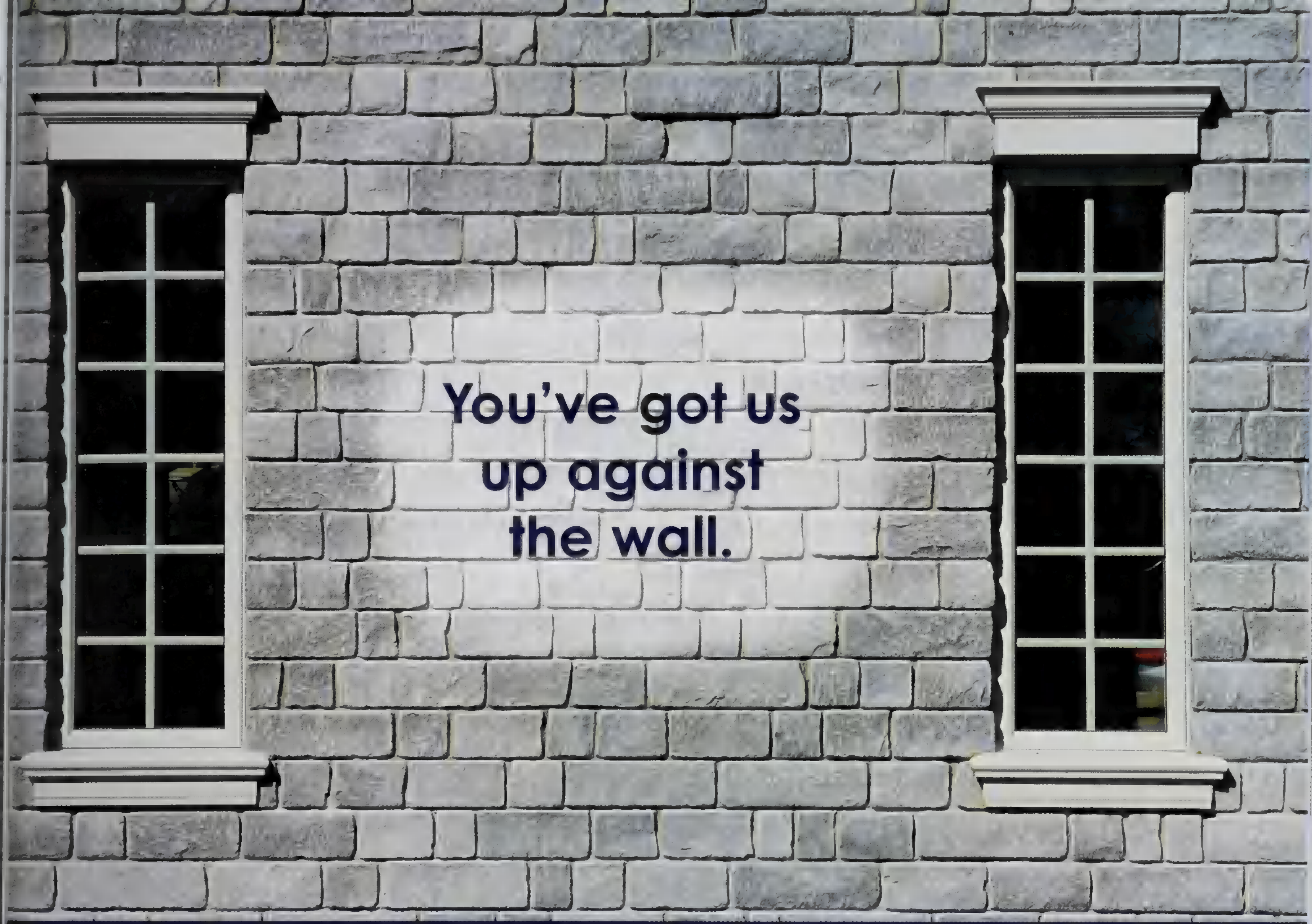

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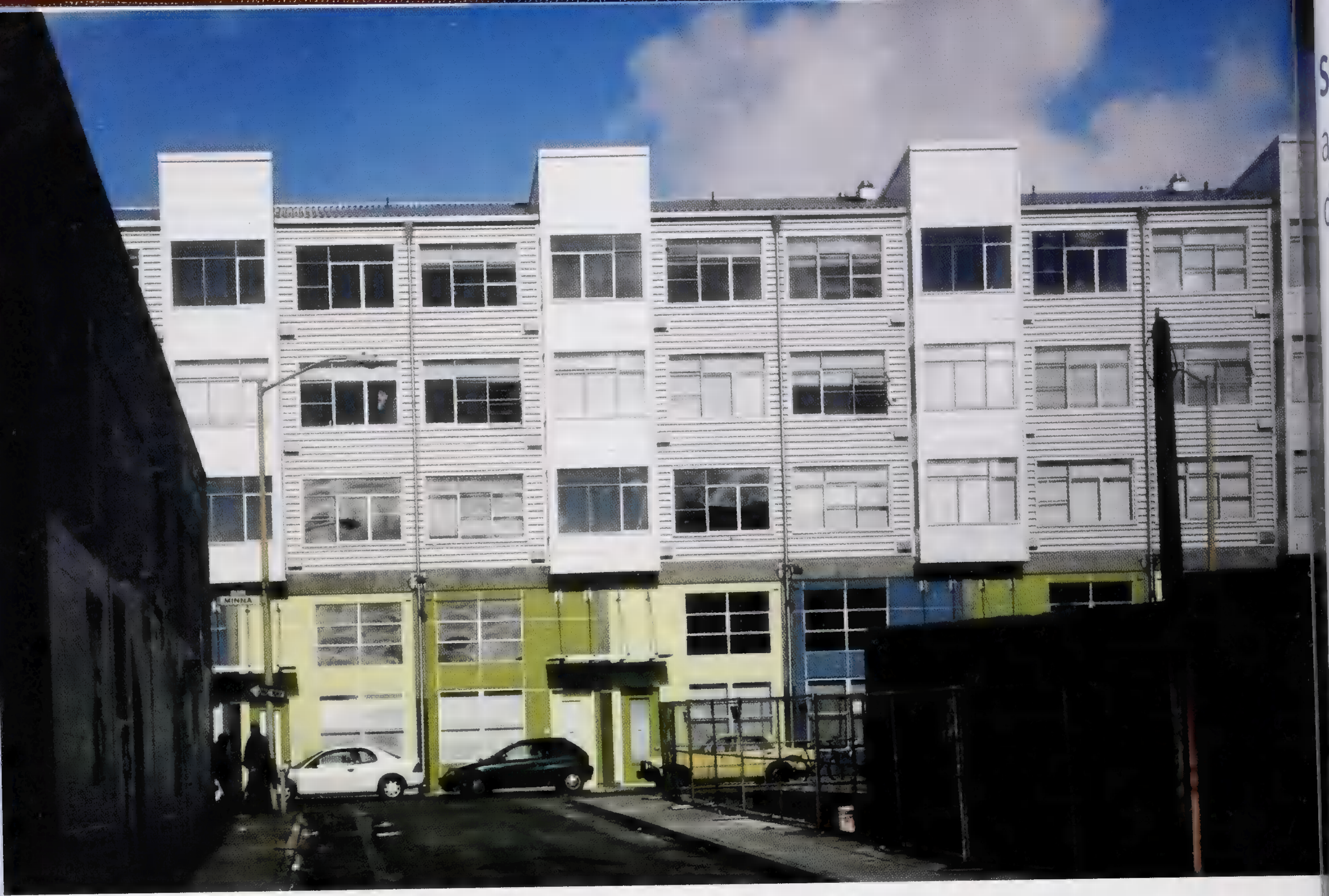
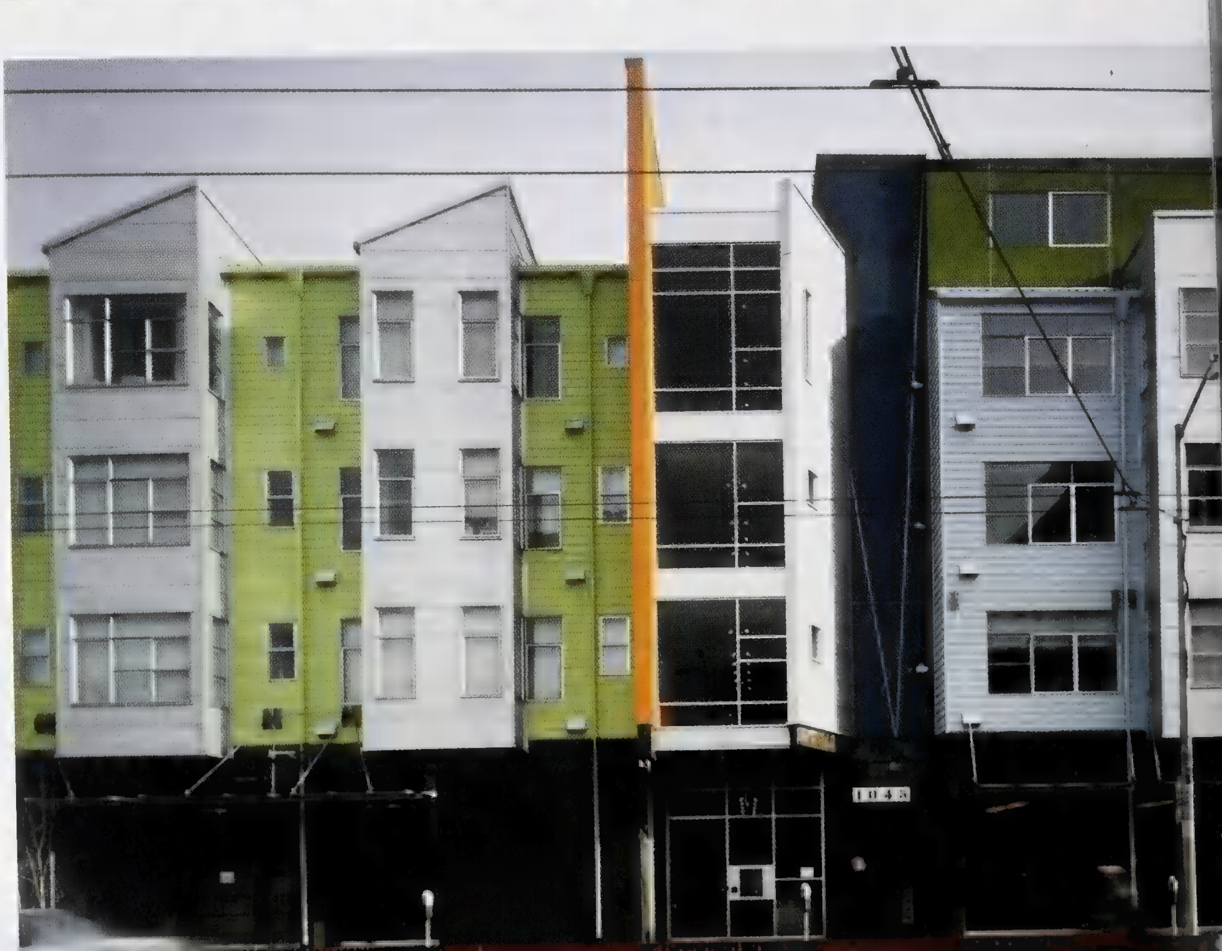


The street facades employ surprising combinations of color (above). The apartments sit on top of the parking structure and are organized as two long, narrow buildings (right). A southern aerial view of SOMA Residences (below, in the foreground).



PHOTOGRAPHY: © BRIAN ROSE

SOMA Residences by David Baker + Partners achieves bold steps toward gentrification in the destitute area south of Mission Street

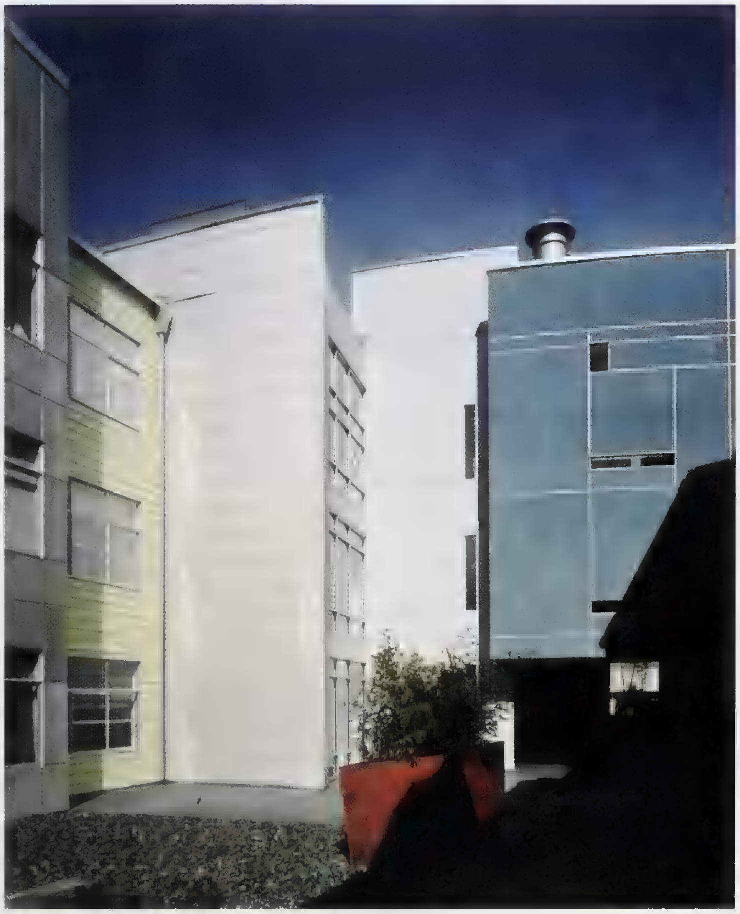
By Lisa Findley

Until the dot-com boom drove up already high housing prices in San Francisco, the block between 6th and 7th streets on Mission Street just south of Market was downtrodden despite its proximity to downtown. Large numbers of the homeless and panhandlers wandered about the area, where there are several single-room occupancy hotels, and drugs and prostitution are clearly present. While loft developments and warehouse conversions had already transformed many parts of South of Market (SOMA) nearby, the Mission area remained desolate, even with the prospect of a new federal office building to be built a block away, designed by Morphosis and due for completion in 2005 [Record News, September 1999, page 69]. This changed last year when the SOMA Residences, a 278-unit, high-density apartment building along Mission Street, opened its doors. Suddenly, young, hip dot-com employees were coming and going, and small businesses were operating out of the project's street-level live/work spaces.

David Baker + Partners were the ideal architects for this large project with tight square footages and a bounded urban site. The firm is one of the most capable multifamily housing design teams in California, with numerous successful projects for nonprofit organizations having demonstrated their skill in making a little go a long way [RECORD, December 2000, Pensione Esperanza, page 136]. In the SOMA Residences, they put their skill at the service of a for-profit developer, working with a tight budget of $97 per square foot in a booming construction economy. "This one was an exciting challenge for us," says Baker. "How many times does one get a chance to do a 400-foot-long building?"

The project extends along Mission Street and through the block to Minna Alley. A two-level parking structure negotiates the slight slope between the two streets, wrapped with retail spaces on Mission and live/work spaces on Minna. The apartments sit on top of the parking structure and are organized as two long, narrow buildings with a linear courtyard in between. The street facades, which employ surprising combinations of color, are scaled down by bay windows, a pattern that has flourished in San Francisco as a technique for bringing more light into interiors. The units facing inward have balconies and patios facing onto the long, light-filled courtyard that tops the parking levels, which are enlivened by bamboo plantings and small water sculptures. A circulation bridge that connects the long buildings at midpoint on all levels breaks up the length of the courtyard and building, providing a more modest scale to each half.

Contributing editor Lisa Findley practices architecture in Oakland and teaches at the California College of Arts and Crafts. She is currently writing a book, Constructing Culture: Architecture, Memory, Politics, and Hope.



PHOTOGRAPHY: © BRIAN ROSE

The architects balance the fortresslike qualities of the buildings, which are designed for increased security, with entrances and exits at several different locations, which create permeability and easy access. It is possible, for instance, to leave an apartment on the third floor, descend down into the quiet world of the courtyard by the exterior stair from the bridge, and exit to the street via an exterior stair.

Breaking up the relentless length inside the buildings was even more challenging. The main circulation, logically placed in a central corridor, passes generous public areas off the main elevator bank that open to the bridge connecting the two long buildings. The dark, tunnel-like effect of lengthy, double-loaded corridors is mitigated by Baker's insistence on windows at the end of each one, and also by the elegant

---

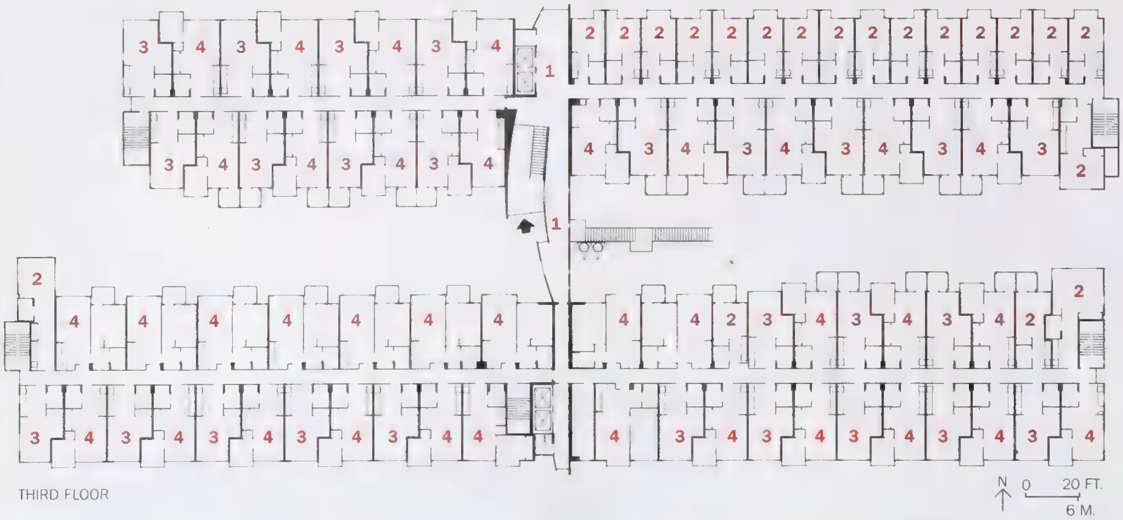
Sources

Project: *SOMA Residences, San Francisco, Calif.*

Architect: *David Baker + Partners—David Baker, FAIA, Peter MacKenzie, AIA, Ted Yoon, Maya Tuve, José Vilar, AIA, Nick Gomez, Assoc. AIA*

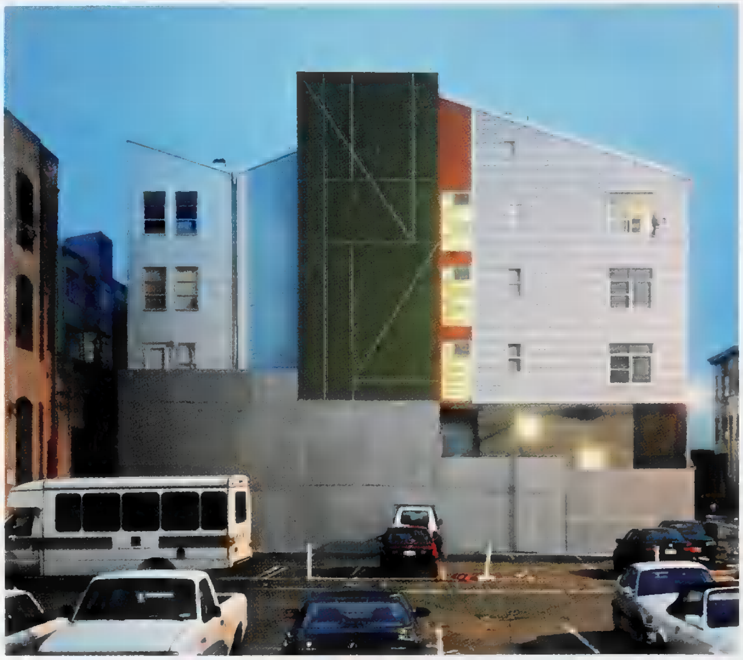
Engineer: *Tipping Mar (structural); Jya Consulting Engineers (mechanical); Golden Gate Engineering (electrical)*

General contractor: *Nibbi Brothers*



1. *Lobby/bridge*
2. *Studio*
3. *Junior one bedroom*
4. *One bedroom*

SOMA Residences consist of small units ranging in size from 340-square-foot studios to 630-square-foot one bedrooms with lofts.



light-coffer detail, which breaks up the ceiling plane with brightly colored lit recesses.

SOMA Residences consist only of small units ranging in size from 340-square-foot studios to 630-square-foot one bedrooms with lofts. The lofts occur in all of the third-floor units, where the extra space is welcome. Forty percent of the units are at lower rents, while the remainder rent for market prices ($1,950 for the one bedroom with loft). During design, none of the units was conceived as a family dwelling. However, given the tight and expensive San Francisco rental market, families have moved in. Compared to the size of low-income apartments in Kowloon or Manila, these units are spacious.

Even in a slowing economy, the developers are obviously benefiting handsomely from the skill and imagination the architects brought to [illegible]uilding. And, while no single project could turn around the grim 6th and Mission area, the neighborhood is benefiting enormously from the cleaned-up street edges, daily commuting rhythms, and the sheer act of faith of building this building here. Such changes are not without costs. While many have hailed the cleaning up of the neighborhood, social service advocates c[illegible] the displacement gentrification brings. No one is quite sure where all the people who lived in the SROs torn down to build SOMA Residences have gone. ■

Sources

Exterior cladding: *Conrad Soluig (concrete)*

Aluminum windows: *All Weather*

Skylights: *Velux*

Hardware: *Shlage*

Cabinet and custom woodwork: *Phoenix Biocomposites*

Resilient flooring: *Armstrong*

Floor and wall tile: *Dal Tile*

Reception furniture: *Mindy Ward-MAX*

Interior ambient lighting: *Lithonia*

Elevators: *Otis*

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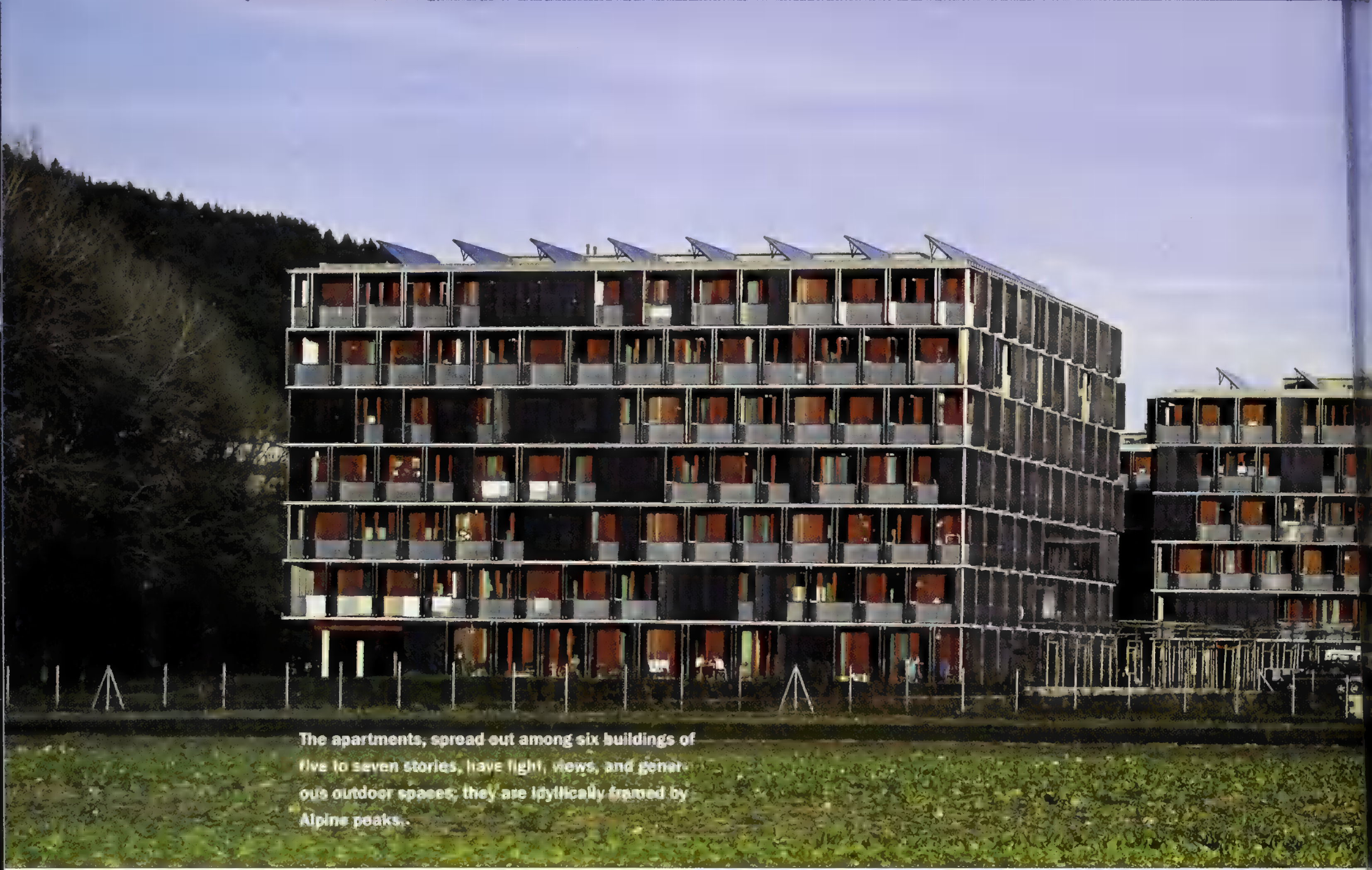
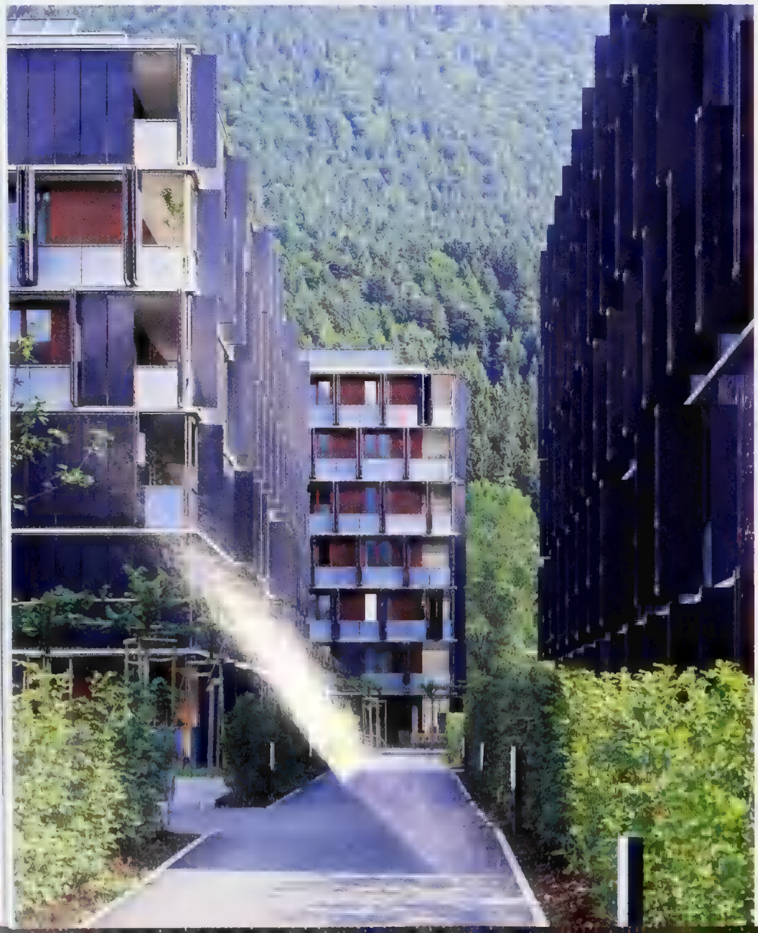
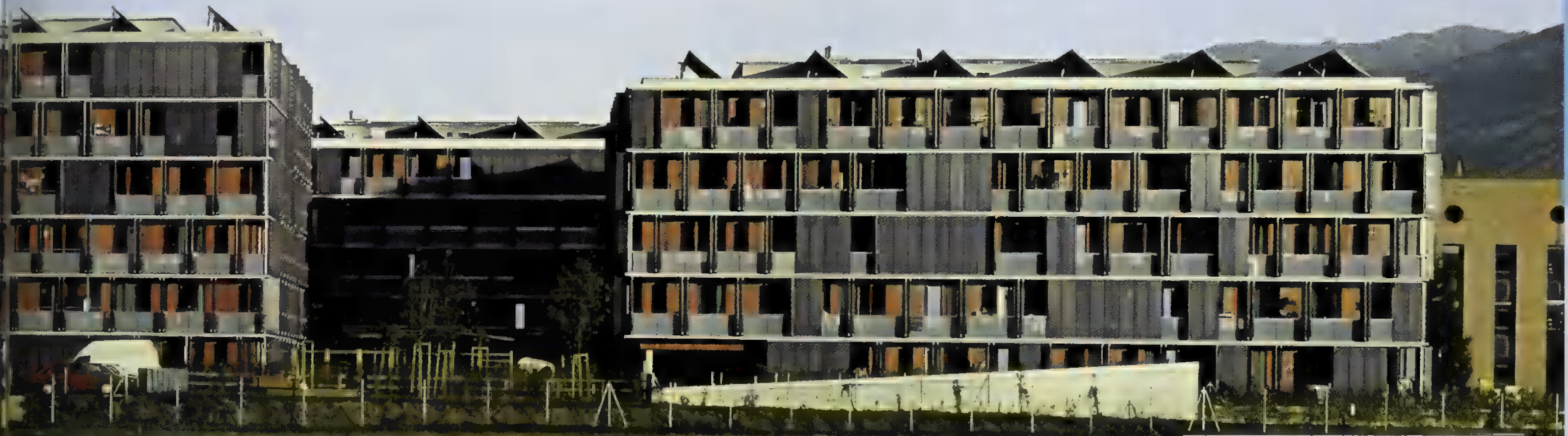
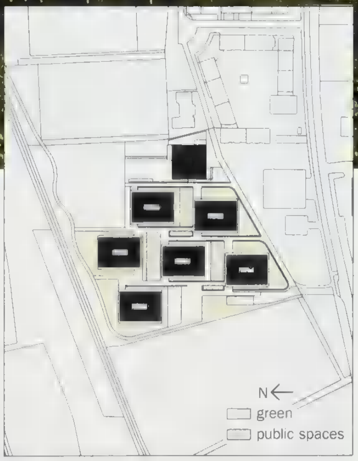


The apartments, spread out among six buildings of five to seven stories, have light, views, and generous outdoor spaces; they are idyllically framed by Alpine peaks.



Baumschlager & Eberle's humane and energy-efficient housing adds dignity and color to this Alpine setting





PHOTOGRAPHY: © EDUARD HUEBER

By Elizabeth Kubany

When they begin a new housing project, Carlo Baumschlager and Dietmar Eberle try to put themselves in the shoes of the people who will live there. Understanding the inherent conflicts of diverse cultures living in close proximity, where, as Baumschlager explains, "You might have an immigrant from Turkey living next to one from Uzbekistan in a very high-density situation," their Lochau, Austria–based firm has devoted tremendous resources to researching housing that dignifies the experience of its inhabitants.

Baumschlager & Eberle rejected the idea of a single housing block early in their careers. Instead, they have developed a housing type where the total number of apartments is spread out among several buildings, each a compact box with a central light well. This basic form, which includes a commitment to very high ecological performance, has become their hallmark in housing. For each job, they adapt and modify it to meet the specific needs of the site and program.

Spread out in six buildings of five to seven stories, Innsbruck Housing was completed in May 2000 and includes 298 apartments from one to three bedrooms for about 1,000 inhabitants. Located on the western edge of the city, the project is idyllically framed by Alpine peaks, and the apartments have light, views, and generous outdoor spaces. Parking is provided in an underground lot so the outdoor spaces between and around the buildings could be given over to a system of paved paths and public areas. Designed by various artists, these areas,are also used as playgrounds for children.

An entry court leads to the large stairways that are lit from overhead. To Baumschlager, the psychological impact of these entrances cannot be underestimated. He often has to convince the developers to spend a high proportion of the budget on them, because, he says, "These areas can influence the emotions of the people who live there and give them a better sense of where they live in the social hierarchy." He calls the entrance, courtyard, and stairway the "border between public and private" that belongs to everyone who lives in or visits the building. A well-designed, well-lit space with relatively expensive finishes can change the perception of both the visitor and tenant.

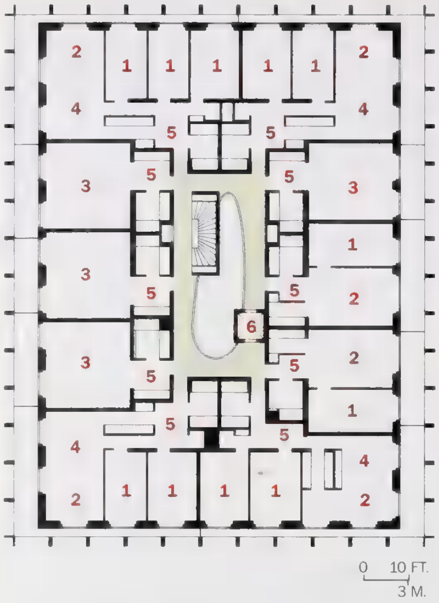
The stairs and elevator empty into communal hallways, which, in turn, lead to individual apartments. In Baumschlager & Eberle's version of social housing, open plans are the norm because they

---

Project: *Wohnen am Lohbach*
Location: *Innsbruck, Austria*
Architect: *Baumschlager & Eberle—Gerhard Zweier, project manager*
Engineers: *Mac Wallnöfe; Fritzer & Saurwein; DI Neuner (structural planning); TB Obwieser (electrical engineer); GMI Ingenieure (energy design)*
Consultants: *Kienast; Vogt & Partner (landscape design); DI Peter Fiby (acoustics)*
General contractor: *Porr AG*

Elizabeth Kubany was a full-time RECORD *editor before she became a Mom. She is now a contributing editor for the magazine.*

An entry court (above) leads to the large stairways lit from overhead. [illegible] stairs and elevator empty into communal hallways, which, in turn, lead to individual apartments.



1. *Bedroom*
2. *Living room*
3. *Studio*
4. *Eating area*
5. *Hall*
6. *Elevator*

allow customization of apartments to accommodate the cultural traditions and individual circumstances of each family. Galley kitchens and bathrooms are on the core side of the apartment, while living spaces face outside to views and light.

Floor-to-ceiling French windows open onto the balcony that runs around the entire perimeter of the building, giving each apartment access to a generous, semi-private outdoor space. Full-height copper shutters mounted on the balconies serve as protection from sun and weather. Eberle calls these shutters "tools to handle the neighborhood," because they allow tenants to let in as much or as little of their surroundings as they want. They also form a dramatic skin for the building, animating it and giving it an ever-changing rhythm.

As with many of Baumschlager & Eberle's projects, Innsbruck Housing integrates energy performance into the design of the building. Highly insulated walls and triple-glazed windows minimize heat loss. Each apartment is equipped with a compact ventilation unit with heat recovery, as well as a small heat pump for air heating and a boiler for hot water. Seventy percent of the annual hot-water demand is provided by solar power, also used to preheat fresh air for the ventilation system in the winter. Rainwater is used to flush the toilets, which accounts for more than half the annual water demand. The energy savings for space heating and domestic hot-water heating amount to approximately 70 percent as compared to conventional dwellings of the same size in Austria.

Evidence of failed social-housing experiments can be seen around the globe, most poignantly in the United States, where the appalling conditions of the housing projects of the 1960s and '70s have become far worse than the ghettos they were designed to replace. As Carlo Baumschlager says, "In the end, you have to listen and look around and figure out how people want to live." ■

Sources

Copper shutters: *Meyer GmbH*
Hardware pulls: *Glutz*
Elevators: *Kone Sowitsch*
Garden: *Josef Hauer*
Floors: *Freisinger GmbH*

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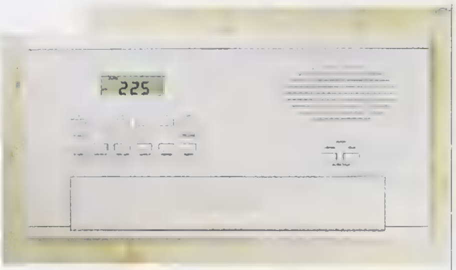


The MC702 Music Communication System offers 30 watts of power to drive up to 15 room speakers and three door speakers. The MC702 speaker offers hands-free response over room speakers with a privacy function—plus the ability to monitor yard or patio, nurseries, or any room in the home. The music system features separate base and treble control, with 16 preset radio stations. 800/877-6631. M&S Systems, Dallas. **CIRCLE 200**

► Culinary communications

The iCEBOX, a Web-enabled kitchen entertainment center, provides access to information, communication, and entertainment by combining cable TV, Internet and e-mail, DVD/audio CD player, and home video monitoring in one package. The FlipScreen iCEBOX fits conveniently under a standard kitchen cabinet, is broadband-enabled and features an adjustable LCD monitor that flips up and out of the way when not in use. A washable, shock-proof, and grease-proof wireless keyboard and remote are included to withstand the rigors of the kitchen environment. 877/463-7637. iCEBOX, Seattle. **CIRCLE 201**

◄ Don't do windows

SunClean self-cleaning glass hopes to make squeegees a relic of the past. Featuring a transparent titanium dioxide coating, the glass helps break down dirt particles and sheets water so that rain or the light spray of a garden hose can rinse the exterior clean. After a few days of exposure to ultraviolet rays from the sun, the coating becomes energized and provides photocatalytic and hydrophilic properties. 412/434-3046. PPG Industries, Pittsburgh. **CIRCLE 202**

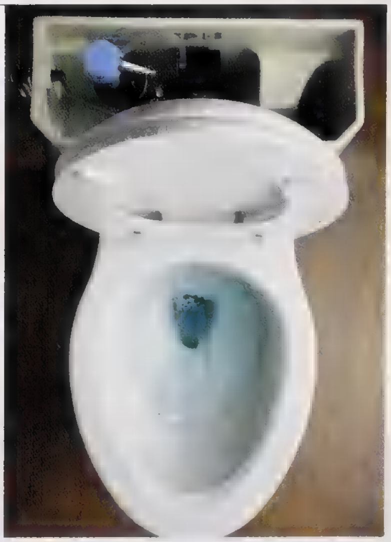
◄ Metal frame look

Simonton Windows premiered the company's Metallon finishes product-upgrade option at the 2001 Remodeler's Show in November. Available in the vinyl window category, the windows feature Metallon finishes containing over 95 percent real metal that is cold-spray applied to the frames. Remodelers have the option of specifying the finish on the interior or exterior of the frame—or on both. The finish is available in bronze, nickel, brass, and copper on Casement, Awning, Picture, Bay, Bow, and Geometric window styles. 800/542-9118. Simonton Windows, Parkersburg, W.V. **CIRCLE 204**

▲ Swe[illegible] laundry

The ASKO W[illegible] and T701 washer and dryer pair can be installed below countertops, s[illegible], or raised off the ground (shown here on pedestals). The Swedish-built wa[illegible]comes with a drop-down door to make a work surface, fully electronic controls, [illegible]wo new time-saving programs. The products all have the Energy Star label and [illegible]ss-steel tubs and drums that won't rust or snag clothes. 972/725-1757. As[illegible]chardson, Texas. **CIRCLE 203**

► More flush, less water



Kohler has developed the Ingenium flushing system—a gravity-fed, siphon-jet system with all internal components designed to operate concurrently to make the most efficient use of 1.6 gallons of water. These toilets provide flushing performance that is comparable to Kohler's previous 3.5-gallon models. By using only 1.6 gallons of water per flush, the Ingenium system conserves up to 11,000 gallons of water per year for a family of four. 800/4-KOHLER. Kohler Co., Kohler, Wis. **CIRCLE 205**

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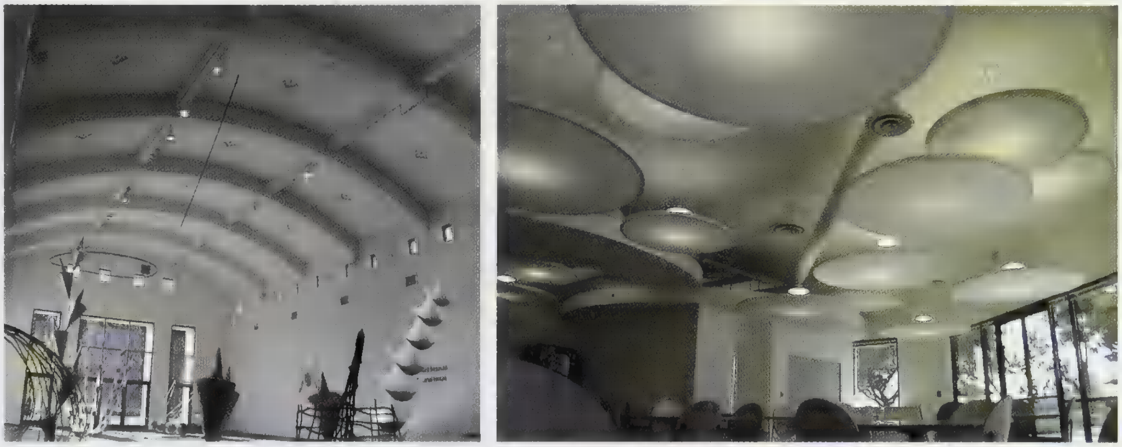
New Products

Here are a few trade shows/conferences to catch you up on what's happening in the ceiling industry: February 8–11, Intl. Home Builders' Show, Atlanta; March 12–17, Assoc. of the Wall and Ceiling Industries 2002, San Antonio; April 14–18, Ceilings and Interior Systems Construction Association's Convention and InterCon 2002, Phoenix. *Rita F. Catinella*

Versatile acoustical treatment diffuses light and controls a variety of noise levels

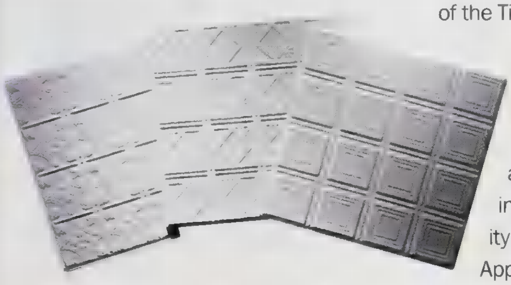


Boise Art Gallery, CSHQA Architects (left). Mentor cafeteria, Stewart Romberger and Associates (right).

Eurospan wide-span acoustical treatment features a smooth monolithic appearance and can be specified up to 16' wide by more than 40' feet long without any joints. Three main components make up the system: a fabric tensioning track, an acoustical core, and a wide-span textile. Eurospan offers high sound absorption with N.R.C. values from .75 to 1. The treatment mounts directly to drywall or to grid systems and accommodates penetrations for lights, sprinklers, and HVAC systems. Launched in the San Francisco area in 1997, it is now available in all U.S. markets. There have been several advances since its launch, including the ability to dye Eurospan in custom colors, an all white acoustical core board behind the white Eurospan textile, and new extrusions for luminous ceiling applications.

Eurospan was specified to control the noise of visitors to the Boise Art Gallery, in Boise. Eurospan added high sound absorption (N.R.C. .85) to each ceiling coffer while retaining the monolithic look of the plaster ceiling that was originally in place. Proving its versatility, the Eurospan system was also used in the Mentor employee cafeteria, in Santa Barbara, California. In this project, more than 20 translucent disks, up to 8 feet in diameter, that used the material, diffused light and dampened noise in the food court. 303/466-3700. Wall Technology, Broomfield, Colo. **CIRCLE 206**

Triangle and Square embossed metal ceilings



Armstrong has added two classic architectural tin ceiling patterns to its Tincraft collection of suspended ceilings, Triangles and Squares. Both feature embossed metal looks that were popular in the early 20th century. Triangles offers an Art Deco look featuring 6" triangles with embossed fans in the corners. Squares is more Victorian in nature, highlighted by a series of 6" squares in a soft, vintage tin design. Measuring 24" x 24", the panels are both designed for installation in a 9/16" grid and feature edges that help the panels lie flat, camouflaging the suspension system.

Like Circles, the third member of the Tincraft collection, the new panels offer an affordable alternative to traditional tin and metal ceilings. They also provide safer, easier installation plus accessibility to the plenum. Applications include boutiques and other types of specialty retail stores and a variety of hospitality spaces. The panels are not recommended for areas requiring acoustical absorption. 877/ARMSTRONG. Armstrong World Industries, Lancaster, Pa. **CIRCLE 207**

Urethane millwork suspended ceiling system

Style Solutions's new product line includes 24" square lightweight tiles in the Eaton profile. An Eaton ceiling medallion graces the center of each tile surrounded by egg and dart molding. Tiles are available in either 6" depth for high ceilings (providing an attractive shadow line) or a shallow 2½" depth for lower ceilings. The ceiling grid system includes trim strips and rosettes to cover suspension grids. Designed to complement a wide range of existing crown moldings and ornamental trims, the system can be used for both new construction and for remodeling residential applications. Each piece in the system can be installed as it arrives with just its barrier coat of white paint. As an alternative, contractors can paint, stain, or faux-finish the pieces to accent a room. The tiles are also available with an upgrade real metal Metallon finish option in copper, bronze, brass, and nickel. 800/446-3040. Style Solutions, Archbold, Ohio. **CIRCLE 208**

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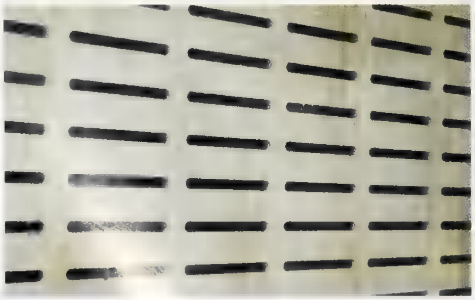
New Products

▲ Saran rap

Saran, the latest finish from Ceilings Plus, is dimensionally textured with true color, patterns, and grain characteristics to match real wood. Saran is a Class 1 product and can be used for interior and exterior applications. It is applied to Ceilings Plus pre-engineered accessible ceiling and wall panels and can be perforated for acoustical noise reduction, and also curved to a variety of shapes. 800/822-3411. Ceilings Plus, Los Angeles. **CIRCLE 209**

► Gravity-defying panels

Fresco Climaplus (shown) and Brio Climaplus are two new sag-resistant cast ceiling panels from USG. While Fresco features a bold textured design and Brio a subtle honeycombed appearance, both offer a high N.R.C. rating of .65 to .75 and are integrally colored. The ¾"-thick panels are 2' x 2' and contain an average of 68 percent recycled content. 800/USG-4YOU. USG Interiors, Chicago. **CIRCLE 211**

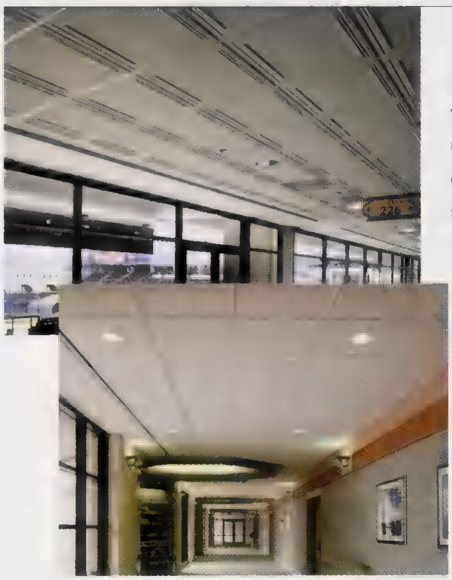


▲ Acoustical [illegible] panels

The Aluratone Scored acoustical panel is available for wall and ceiling applications. The 100 Series utilizes Rulon design, engineering, and machining capabilities to provide project specific faces that meet the aesthetic and open area requirements for appropriate sound control. Other configurations, including square or semi-square acoustical openings, are also possible. All panels can be factory finished with clear or custom-tinted materials for rapid installation. 800/227-8566. Rulon Company, Brunswick, Ga. **CIRCLE 213**

► Clean your room

Designed for areas such as clean rooms and clean zones requiring high levels of air cleanliness for airborne particulates, Gridstone CleanRoom panels are sealed on the face and back with a two mil rigid vinyl. The edges are factory sealed with a coating that encapsulates the exposed edges, providing a completely sealed panel. They feature a USDA-accepted finish for use in food service and food processing areas. 800/NATIONAL. National Gypsum Company, Charlotte. **CIRCLE 210**



◄ Inhospitable surface

In addition to man-made mineral fibers, most mineral ceiling products contain starch, paper pulp, cellulose fibers, paint, and other sustaining organic material. Eurostone is made from expanded perlite, an inorganic material, and contains none of the organic materials known to support the growth of microorganisms. Eurostone will not burn, warp, or sag. It offers acoustical properties in 19 patterns. 800/323-7164. Chicago Metallic, Chicago. **CIRCLE 212**

▲ Technological style

Hunter Douglas introduces Techstyle Acoustical Ceilings. This suspended ceiling product offers durability, acoustical performance, and complete access to the plenum, all with the near-monolithic appearance of drywall. The large panels (up to 4' x 4') are self-aligning and conceal a standard ¹⁵⁄₁₆" T-grid with a nominal ¼" reveal. Techstyle will be available from Hunter Douglas in the second quarter of 2002. 866/556-1235. Hunter Douglas, Broomfield, Colo. **CIRCLE 214**

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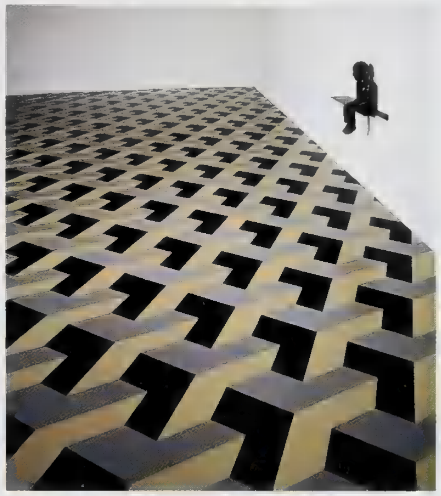
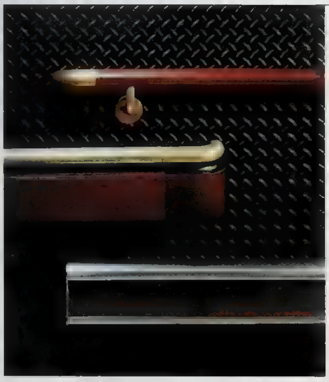
Product Briefs

► Linoleum as art



From last October until last month, nearly 2,000 square feet of boldly patterned, custom-designed linoleum flooring was on display at the Smithsonian's Hirshhorn Museum and Sculpture Garden in Washington, D.C., as part of an exhibition featuring the work of Juan Muñoz, a contemporary Spanish artist who reinvigorated sculpture in the late 1980s. Muñoz, who died last year at 48, often created room-size environments and stagelike settings populated by anonymous figures. Two works in the exhibit, *The Wasteland* (shown) and *The Prompter*, included sharply patterned Armstrong floors as an integral part of the artwork. 877/276-7876. Armstrong, Lancaster, Pa. **CIRCLE 215**

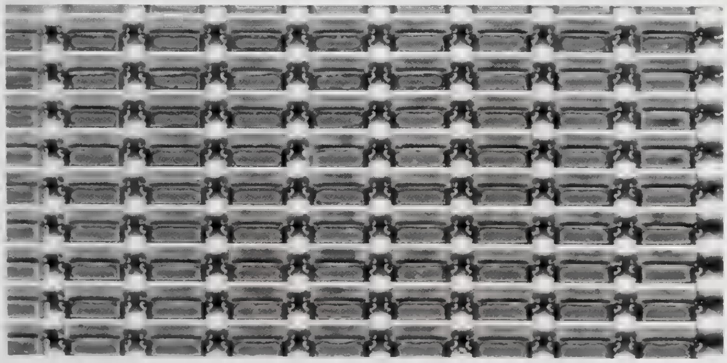


◄ Safety first

The C/S Group introduces its wood and steel collection of handrails, crash rails, and corner guards. These new profiles are designed to work in a variety of interior environments and are available in four wood species and four finishes. The profiles can be manufactured using C/S Group's exclusive metalized finishes in brass, copper, bronze, or nickel silver. 888/621-3344. C/S Group, Muncy, Pa. **CIRCLE 217**

▼ Three-dimensional architectural panel

In contrast to flat perforated sheets, Millennium wall and ceiling panels are formed in three dimensions, with 35 to 45 percent of the panel volume actually open space. This open structure makes Millennium stronger than competing panels of similar weight and offers noise reduction when lined with acoustical insulation. Different visual effects can be achieved by shining light on, through, or behind the panels. Panels come in sizes up to 5' wide and 14' long, allowing for large, uninterrupted spans. 800/747-8954. Gordon Interior Specialties Division, Shreveport, La. **CIRCLE 218**



PHOTOGRAPHY: © GUSTA RISING FOTOGRAF FOR LIGN MULTIWOOD

Product of the Month
CaLignum wood

Developed in Sweden by Lign Multiwood and now available in the U.S., CaLignum is a high-pressure-isostatic-compressed wood. It is produced by a special process that improves the density, hardness, compression strength, bending strength, tensile strength, and impact strength rigidity of all species of wood. CaLignum offers an alternative to rain-forest wood, adds value to low-value wood, and increases the areas of application of most species of wood. Applications include flooring, staircases, furniture carpentry, moldings, and building components. The product range includes compressed, stained, impregnated, sealed, and fire-protected timbers. While all species of wood can be colored and impregnated on the surface layers, the CaLignum process brings the color straight to the heart of the wood (top). 203/227-9140. Lign Multiwood AB, Westport, Conn. CIRCLE 216

▲ Need a cab?

Like CabForms Series 1000 and 2000, Series 3000 is a complete elevator-interior package, delivered prefabricated and ready to install. New in Series 3000 is an interlocking grid system of aluminum tongue-and-groove extrusions that frame each inset panel, offering various configurations. A full palette of materials, ranging from stainless steel and warm-toned metals to wood and solid surfaces, can be mixed and matched in each cab. Complete packages include panels, handrails, trim pieces, and ceiling. The system can also be used to surface walls and other architectural features. 805/684-8626. Forms+Surfaces, Carpinteria, Calif. **CIRCLE 219**

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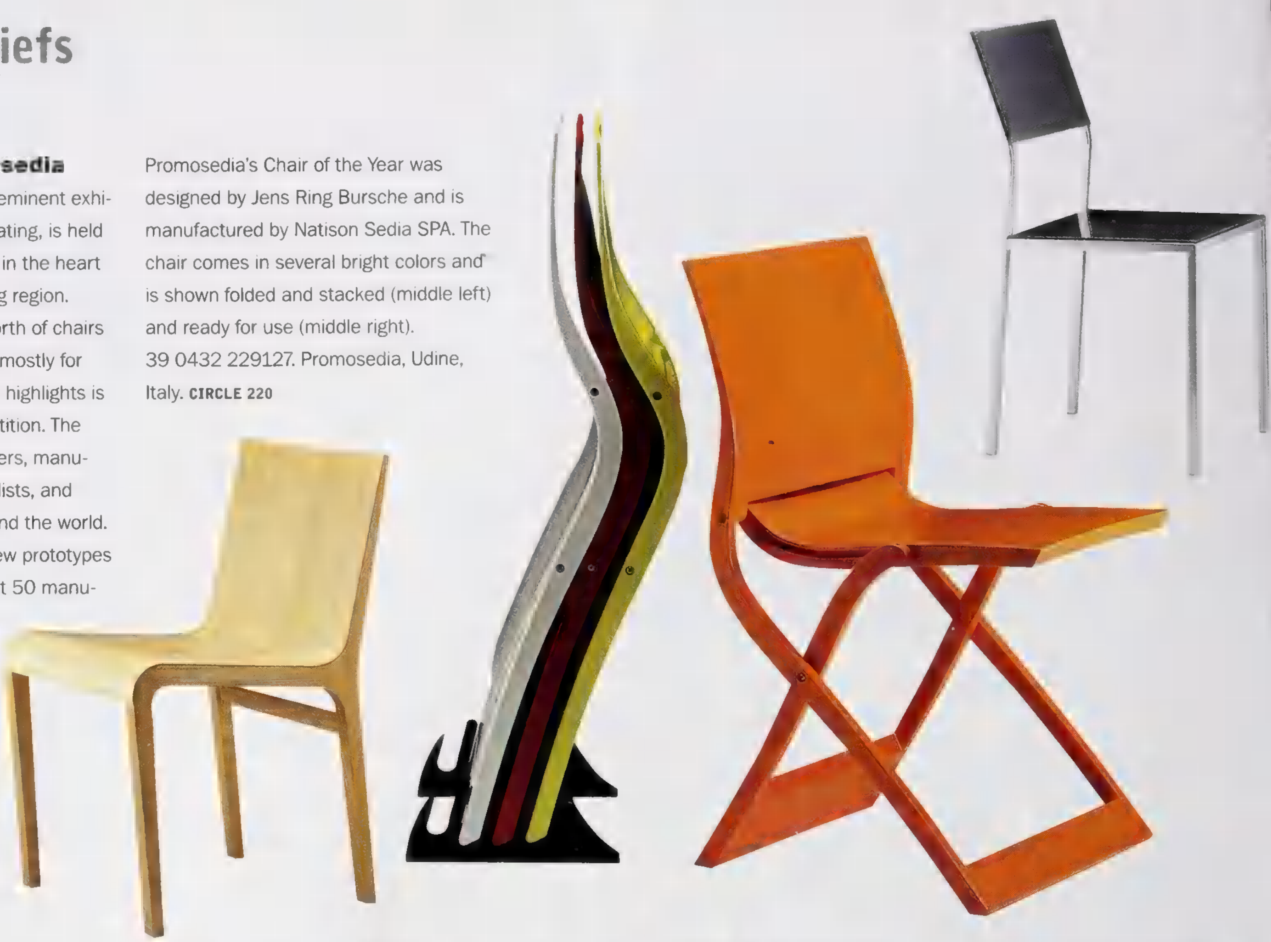
► The best of Promosedia

Promosedia, the world's preeminent exhibition devoted entirely to seating, is held each autumn in Udine, Italy, in the heart of Italy's chair manufacturing region. Here, some $400 million worth of chairs are manufactured annually, mostly for export. One of Promosedia's highlights is the annual "Top Ten" competition. The Top Ten jury includes designers, manufacturers' production specialists, and design journalists from around the world. This year they scrutinized new prototypes from the workshops of about 50 manufacturers. Two of the winners include: Foglia, made of wood, designed by Marco Ferreri and manufactured by Billiani SRL (left); and Kube, made of plastic laminate and metal alloy, designed by Omar De Biaggio for Axal SRL (upper right). Promosedia's Chair of the Year was designed by Jens Ring Bursche and is manufactured by Natison Sedia SPA. The chair comes in several bright colors and is shown folded and stacked (middle left) and ready for use (middle right). 39 0432 229127. Promosedia, Udine, Italy. **CIRCLE 220**



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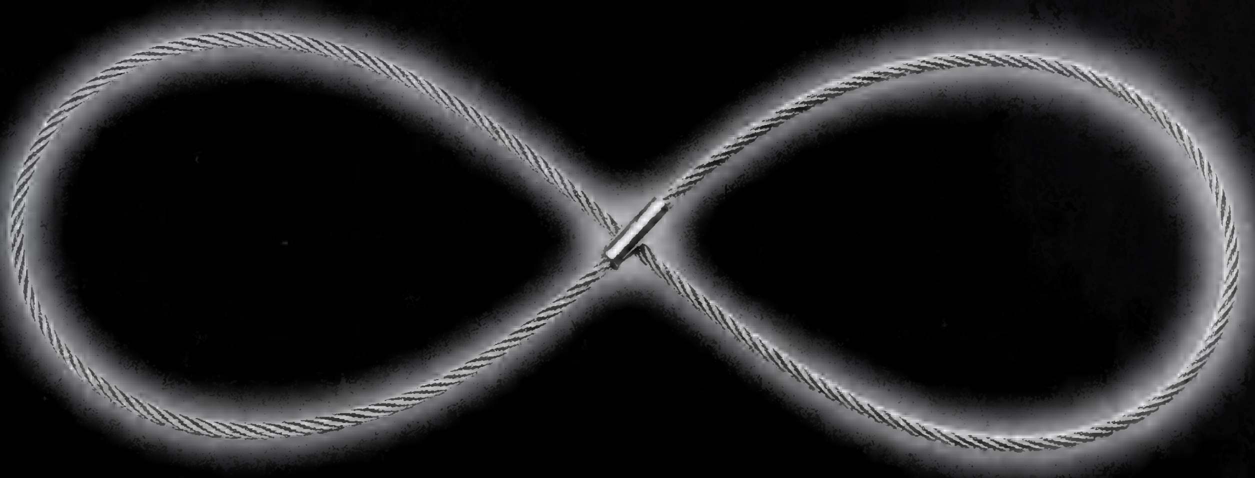

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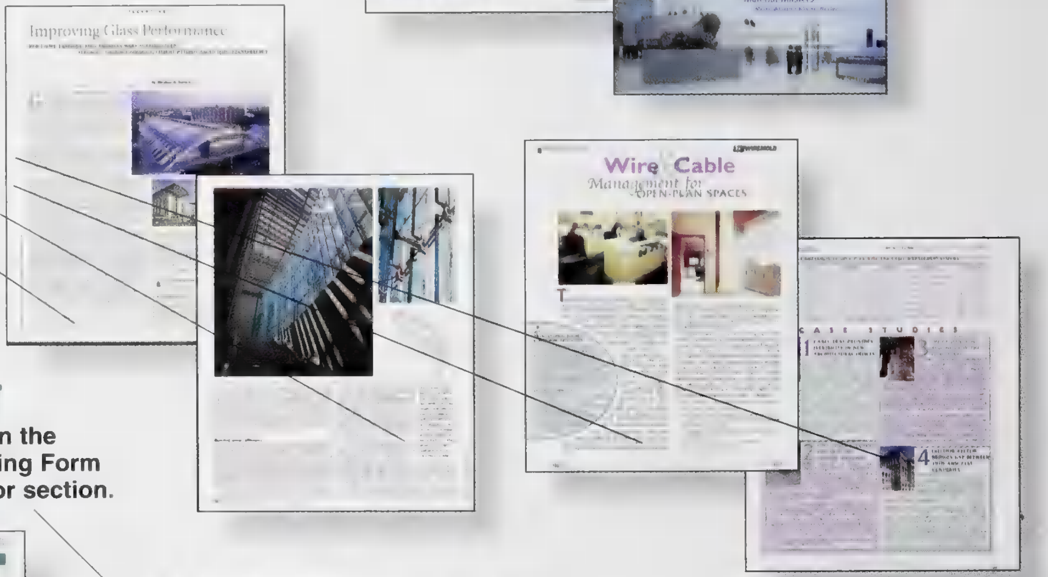
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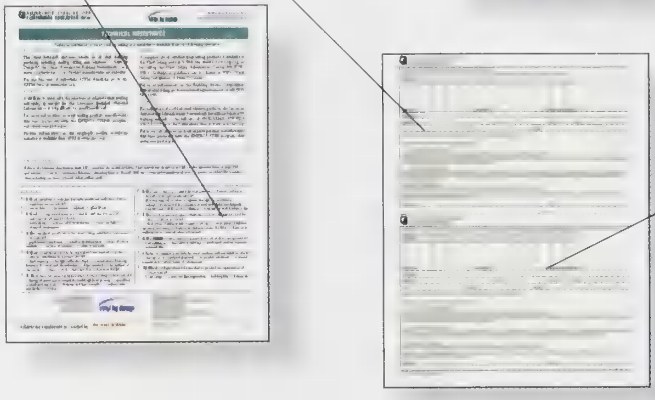

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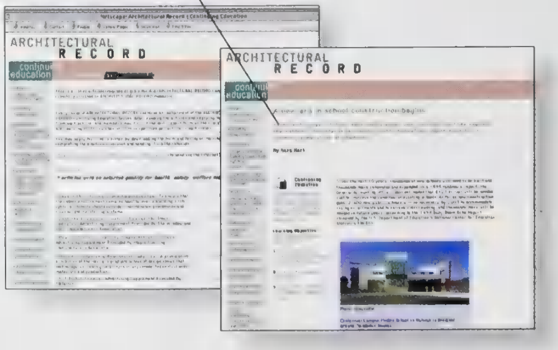
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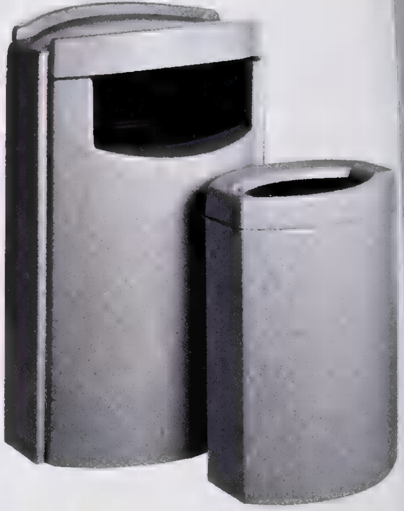
Product Briefs

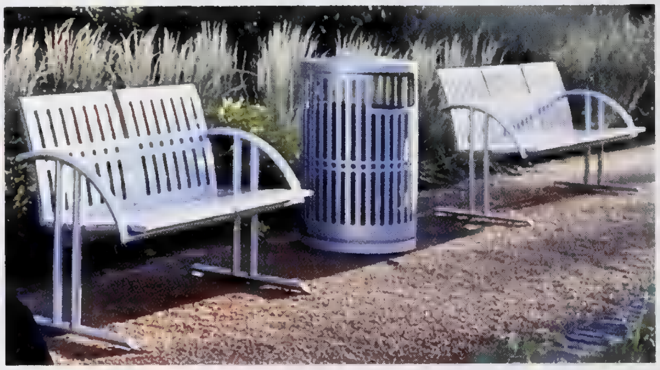
▲ Warming up the campus

For more than 15 years, Wausau has worked with Villanova University to help shape the architectural landscape of the campus—from residence halls, offices, classrooms, the stadium press box, and even the St. Thomas Monastery. Many of the dormitories and dining halls were built in the late 1800s or in the late 1940s through the '50s, and therefore most buildings have single-pane glass and steel-frame windows. Wausau is helping the campus replace these with durable, thermally efficient glass-and-aluminum systems. 877/678-2983. Wausau Window and Wall Systems, Wausau, Wis. **CIRCLE 221**

► Fancier food courts

The Emporia litter receptacle (right) is designed for indoor or outdoor use and is formed of Quarite Plus, a weather-and-chemical-resistant acrylic material. Designed by Kipp Stewart, Chase Park (below) is a new family of modular seating and matching receptacles. The collection is rendered in cast aluminum with rugged steel frames. Seating is available in one, two, or three module units. 800/521-2546. Landscape Forms, Kalamazoo, Mich. **CIRCLE 222**





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Product Briefs

▾ Crossing over the threshold

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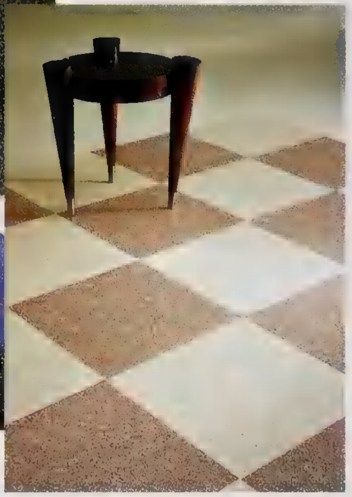
Models will be available for 4$\frac{9}{16}$" and 6$\frac{9}{16}$" jambs. A complete range of widths, including spans for continuous sidelite and patio door systems, are planned. 800/537-7285. Imperial Products, Richmond, Ind. **CIRCLE 223**

▾ New flooring options

Mannington launches ColorPoint (below left) and Solidpoint Premium Visual Tile, both comprised of 10 percent or more recycled vinyl content. Colorpoint features nondirectional, multicolored graining that creates a monolithic look, while Solidpoint is a "virtual solid" resilient tile. Unlike other solid vinyl accent tiles, both are composed of 85 percent limestone. Mannington also introduces Assurance Modular slip-retardant flooring (below right). The 18" x 18" tiles are rated for extra-heavy commercial traffic. 800/241-2262. Mannington Commercial, Calhoun, Ga. **CIRCLE 224**



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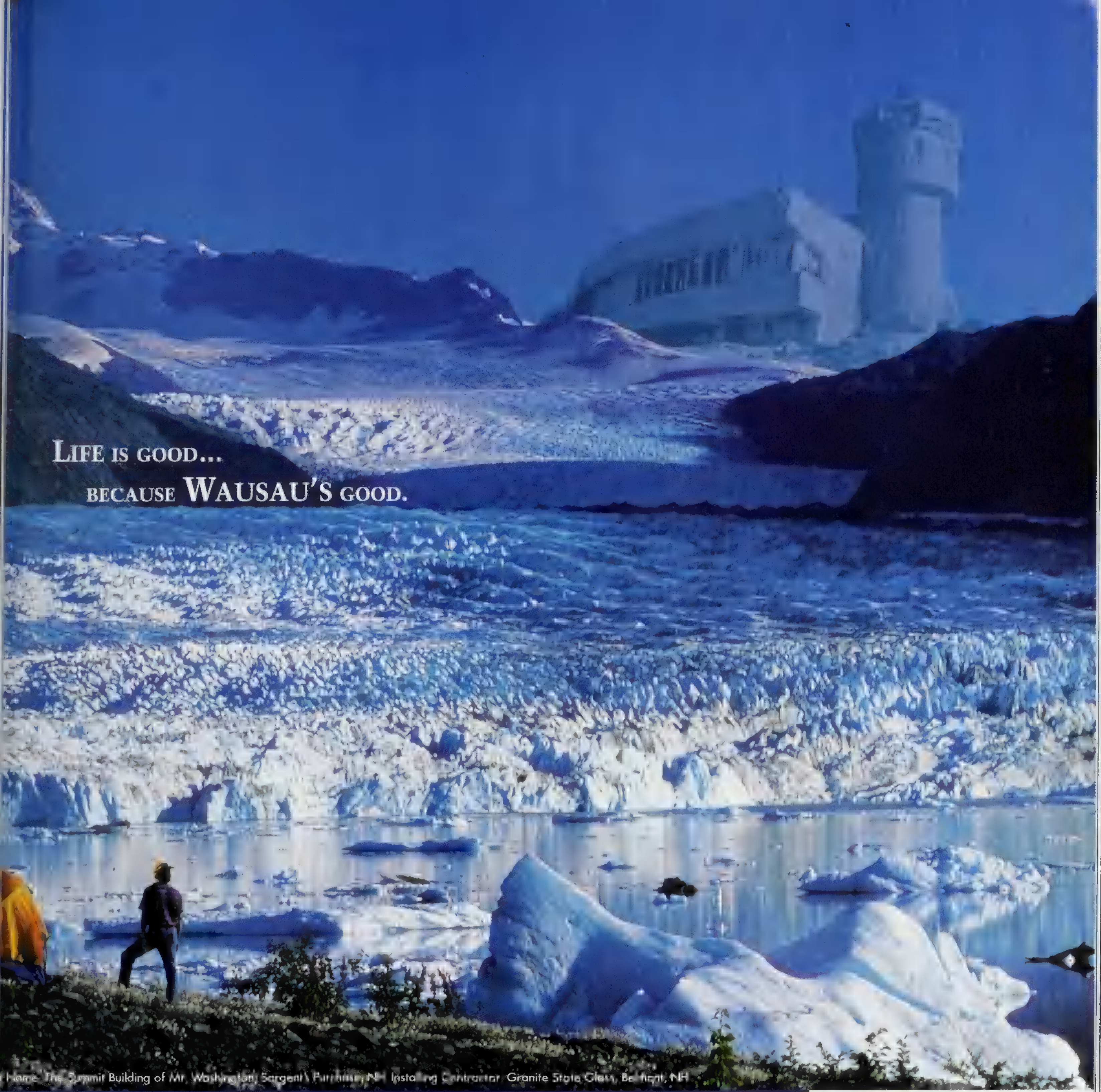

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Product Briefs

▲ Gossip away
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▼ Clear advantage
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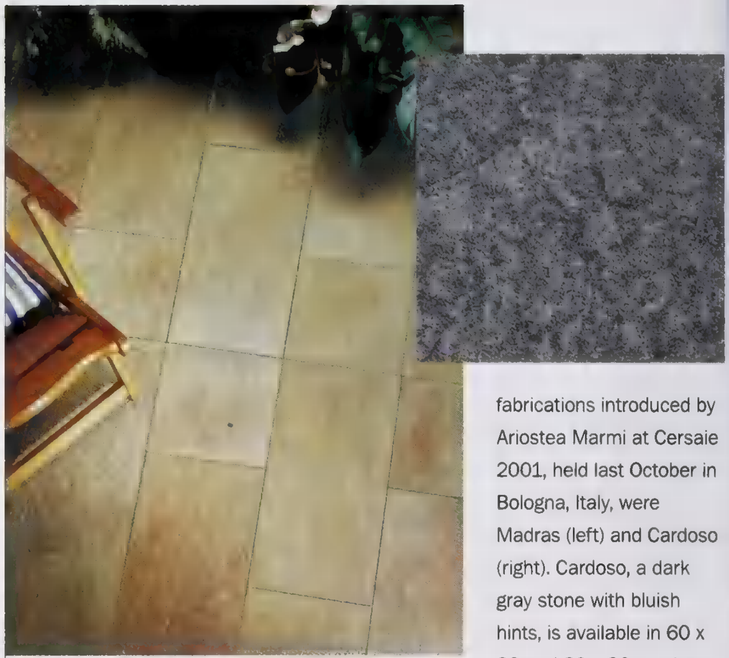

▲ Man-made stone
To reproduce marble and stone in a factory, raw materials are used to give a natural appearance, and new technologies make it possible to have details such as the full-body veining of quarry materials. Two of the new stone fabrications introduced by Ariostea Marmi at Cersaie 2001, held last October in Bologna, Italy, were Madras (left) and Cardoso (right). Cardoso, a dark gray stone with bluish hints, is available in 60 x 30 and 30 x 30 centimeter sizes, in a satin finish. Madras, an Indian stone with warm amber tones, is available in the same measurements as Cardoso, but with a structured surface finish. 39 053 681 6811. Ariostea Marmi, Castellarano, Italy. **CIRCLE 227**

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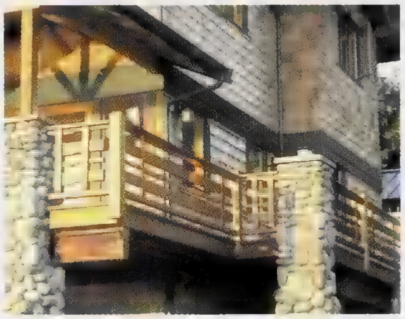

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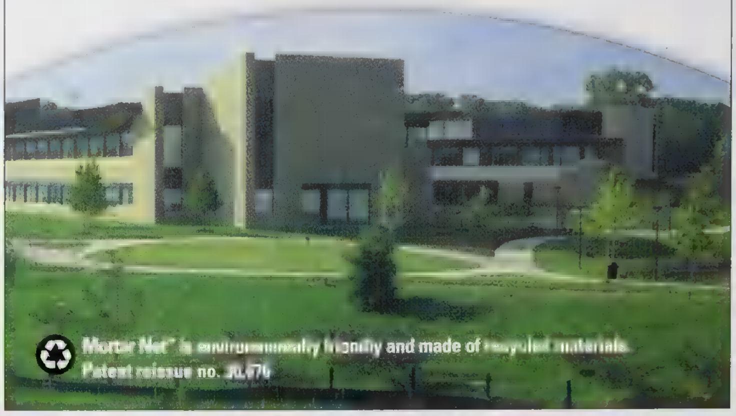

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Cultured Stone Design Solutions 3 is an 84-page design guide, product portfolio, and project showcase including product information and color photographs of homes, gardens, commercial buildings, and public spaces that incorporate Cultured Stone veneer stone products. 800/255-1727. Cultured Stone Corporation, Napa, Calif. **CIRCLE 228**

Fluorescent lighting systems

Litecontrol's new catalog includes product brochures, technical sheets with photometric data, accessories, installation guidelines, and reference information. Product categories include suspended indirect, indirect/direct, direct, perimeter, recessed, and wall-mounted fixtures to meet a variety of requirements in commercial and public spaces. 781/294-0100. Litecontrol, Hanson, Mass. **CIRCLE 229**

Coatings color guide

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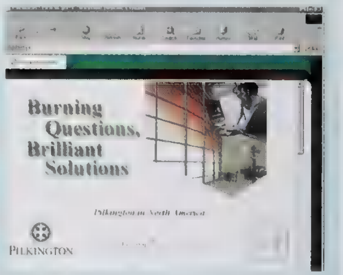

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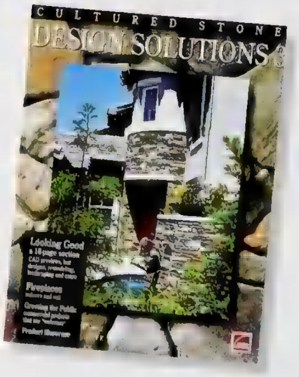

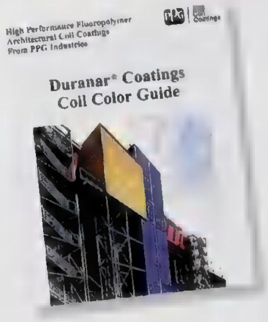
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Product Literature

Anthrax bulletin

Camfil Farr has published an information bulletin on anthrax and the role of air filtration in preventing it from spreading through building HVAC systems. Titled *Anthrax: Definitions, Questions, Answers & Precautions*, the four-page bulletin provides general background information on the disease and discusses the levels of protection afforded by various types of air-filtration devices. Additional recommendations for reducing airborne contaminants in buildings are also reviewed. The bulletin provides links to Web sites offering further information on the topic. 800/333-7320. Camfil Farr, El Segundo, Calif. **CIRCLE 232**

Commercial sheet/tile floors

Commercial Resilient Floors 2002, the new edition of Tarkett's commercial catalog, is now available. The eight-page reference brochure showcases the company's full line of sheet floors and floor-tile lines in high-resolution color swatches, along with installation photos of selected products. The catalog outlines Tarkett's exclusive RMS, or Reduced Maintenance System, that lowers maintenance costs over the life of a floor by eliminating the need for costly polishes, waxes, and strippers. 800/255-6500. Tarkett, Whitehall, Pa. **CIRCLE 233**

Kentucky heritage

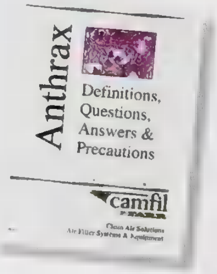
A new brochure from Kentucky Wood Floors, *A Breed Apart*, features the company's comprehensive specialty product line, including custom floors (both saw and laser-cut) in plank and parquet, either prefinished or unfinished, in species from ash to zebrawood and in textures from smooth to hand-distressed. 502/451-6024. Kentucky Wood Floors, Louisville. **CIRCLE 234**

Occupancy sensor lesson

The *Dollars and Sensors* CD-ROM, Leviton's latest commercial products offering, is designed to educate professionals on the applications and benefits of occupancy sensors. 800/323-8920. Leviton Manufacturing, Little Neck, N.Y. **CIRCLE 235**

Insulated roof/wall panels

A new eight-page brochure introduces the German-made Thyssen Bausysteme line of insulated metal wall and roof panels systems to North America. 856/863-2666. New Century Building Systems, Glassboro, N.J. **CIRCLE 236**



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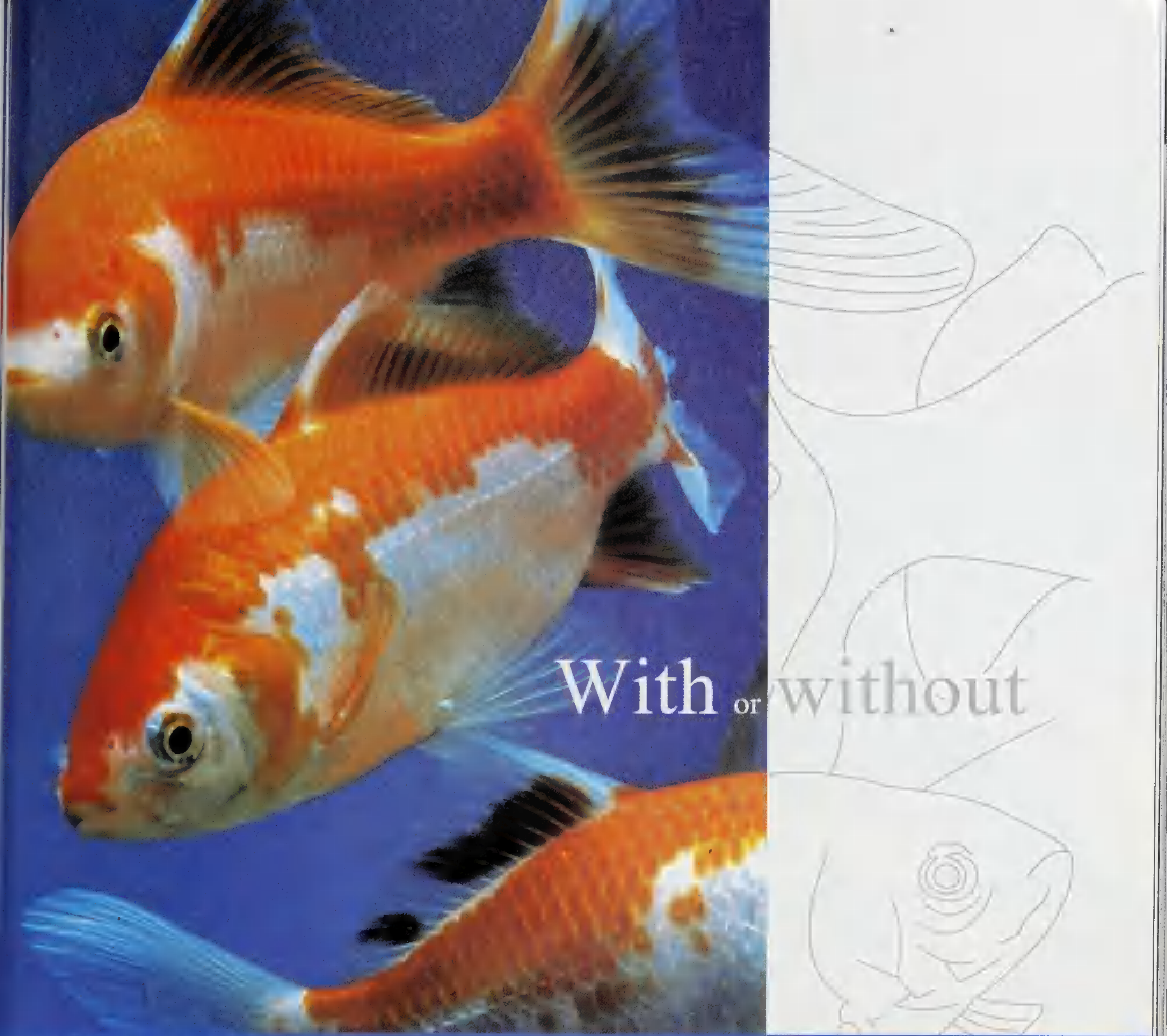

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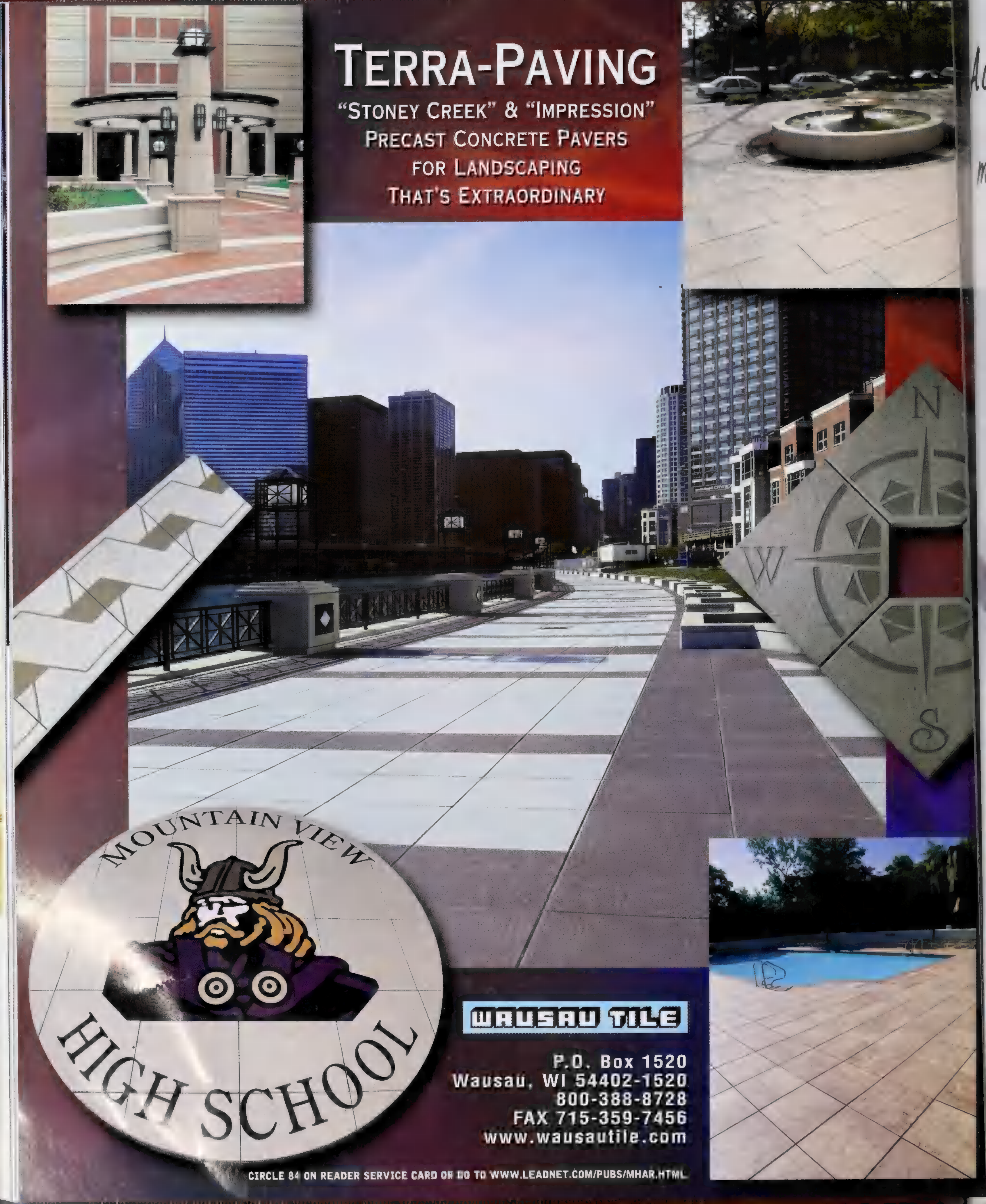

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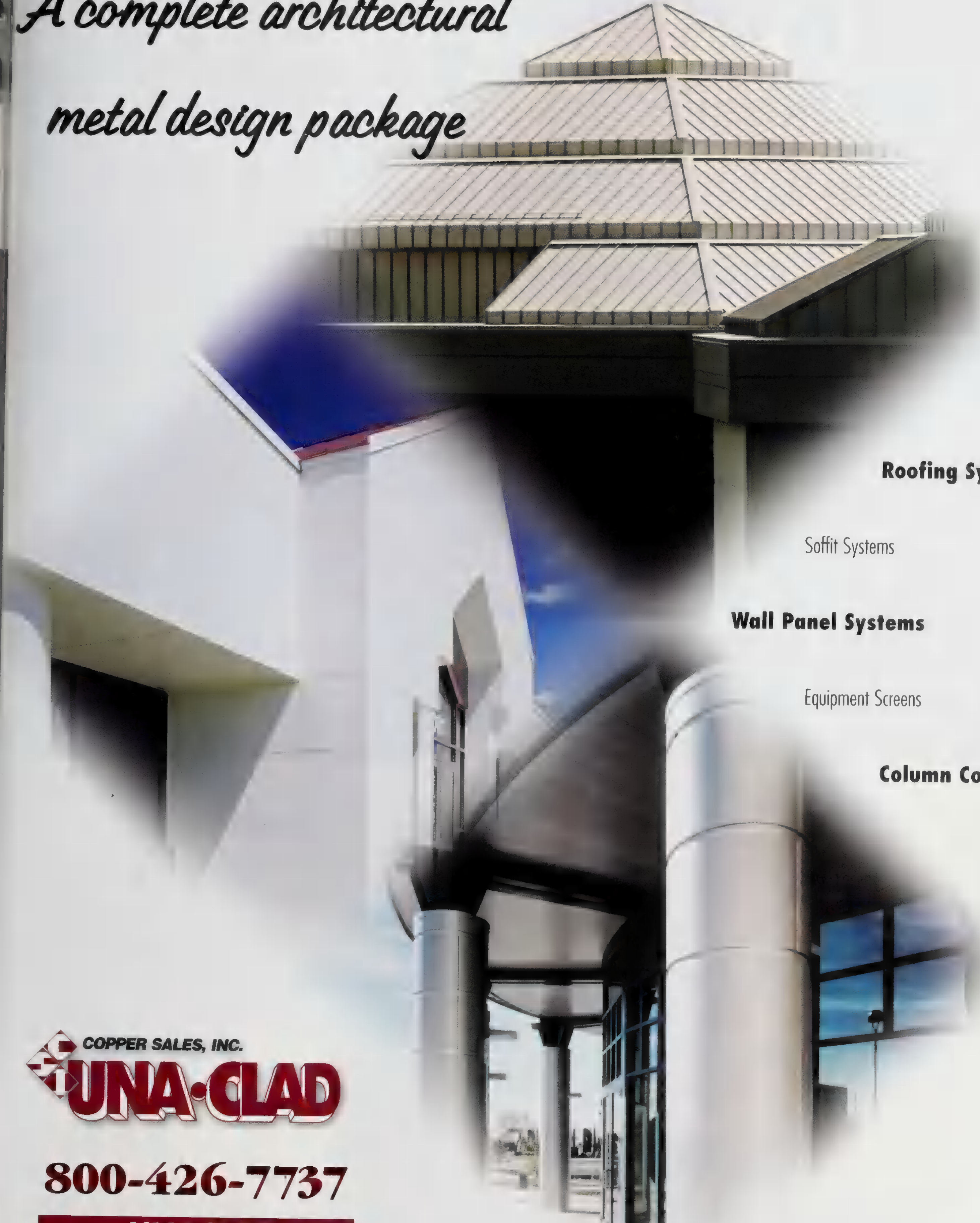

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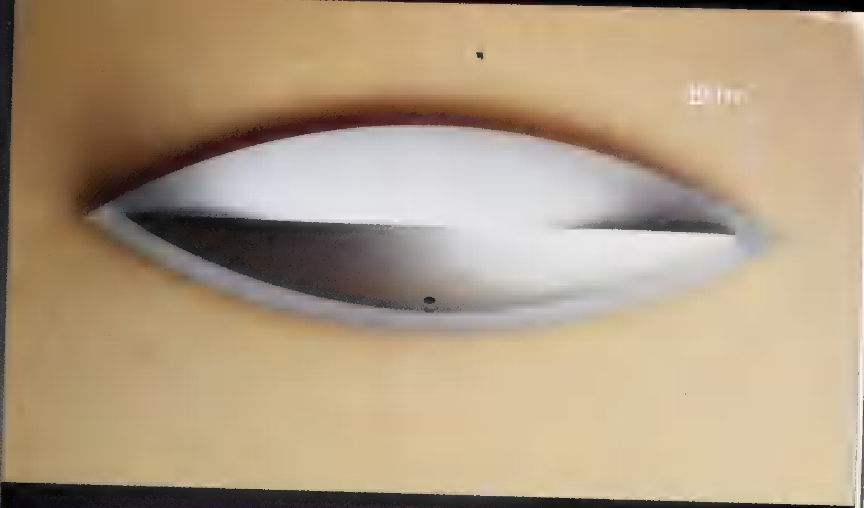

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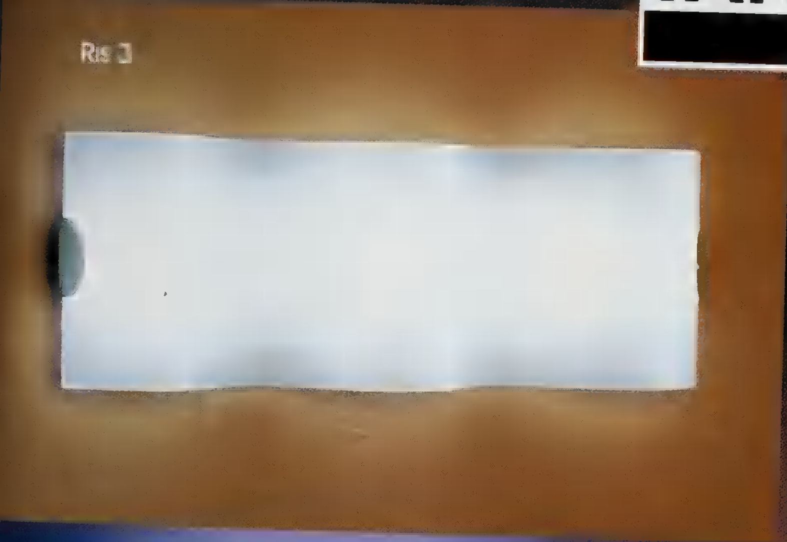

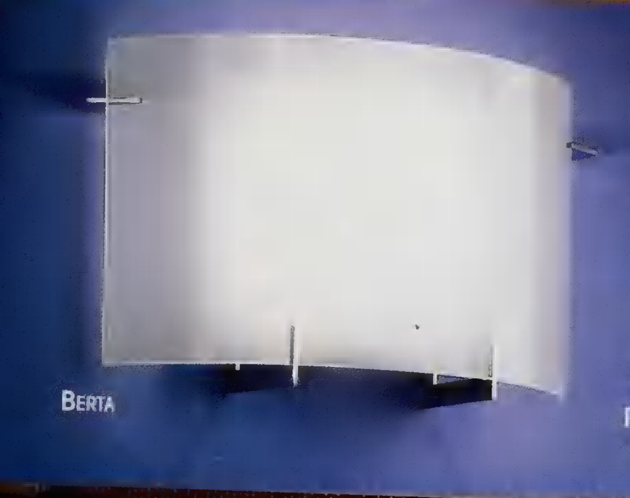

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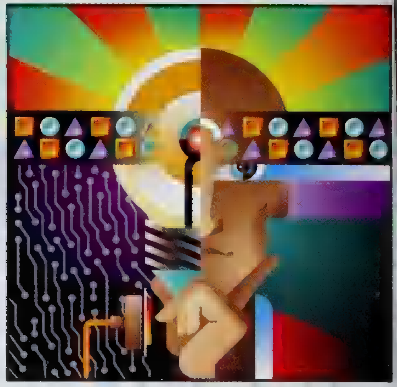

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Program title: **Benefits of Staggered Truss Systems in Multi-Story Residential & Other Applications, Architectural Record (02/02, page 137)** 02SNSPOA
AIA/CES Credit: This article will earn you one AIA/CES LU hour of health safety welfare credit. (Valid for credit through February 2004)
Directions: Select one answer for each question in the exam and completely circle appropriate letter. A minimum score of 70% is required to earn credit.

1. a b c d
2. a b c d
3. a b c d
4. a b c d
5. a b c d
6. a b c d
7. a b c d
8. a b c d
9. a b c d
10. a b c d

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Material resources used: Article: This article addresses issues concerning the health and safety.

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Program title: **LIFE SAFETY DESIGN: Specifying Fire-Rated Assemblies, Architectural Record (02/02, page 143)** 02SNSPOB
AIA/CES Credit: This article will earn you one AIA/CES LU hour of health safety welfare credit. (Valid for credit through February 2004)
Directions: Select one answer for each question in the exam and completely circle appropriate letter. A minimum score of 70% is required to earn credit.

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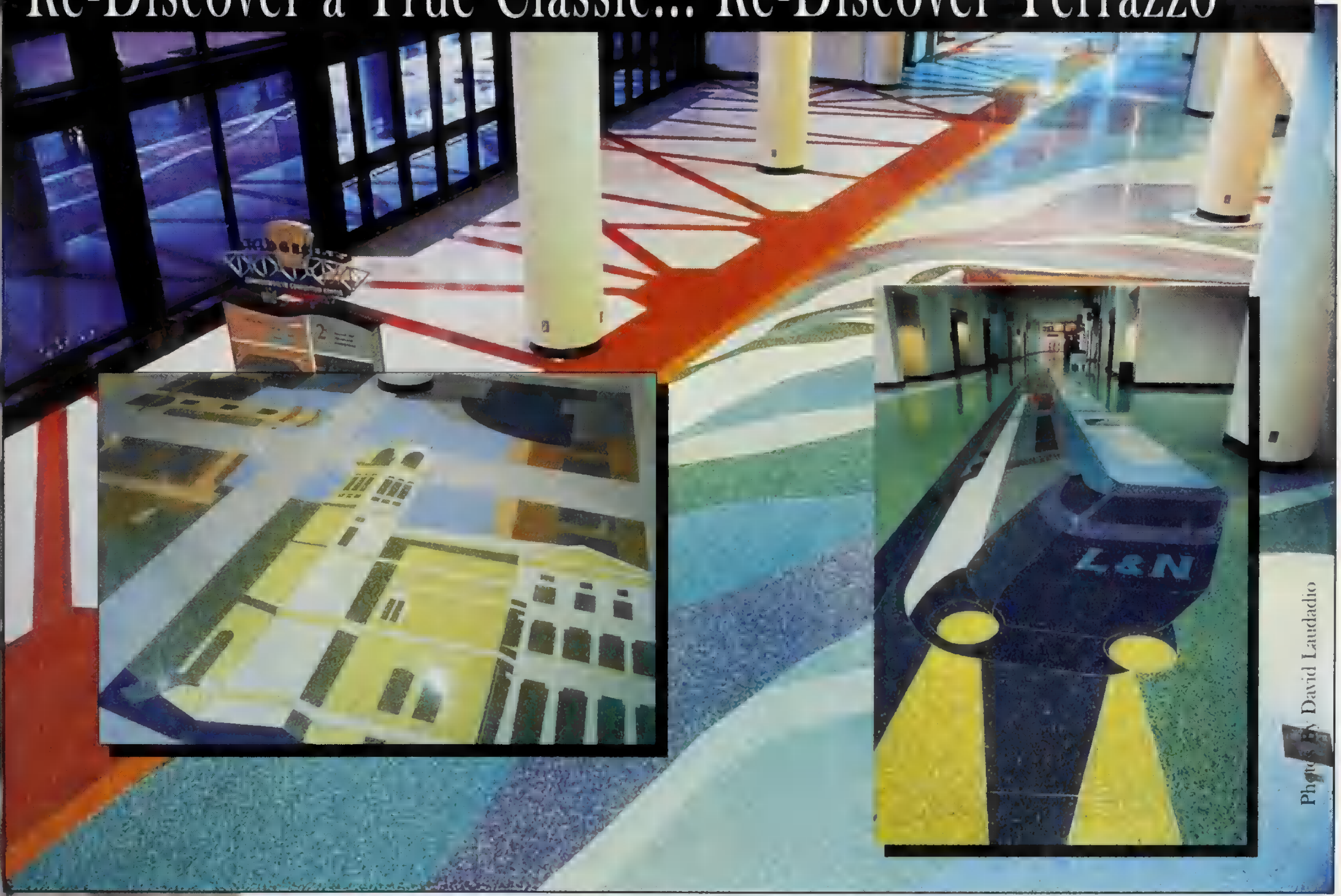

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BG ☐ Engineer
BH ☐ Specifier/Cost Estimator
BI ☐ Landscape Architect
BJ ☐ Planner
BK ☐ Facility Manager
BL ☐ Consultant
BM ☐ Administrator/Office Manager
BN ☐ Educator/ Student
BO ☐ Other Technical
BP ☐ Other Non-technical

Type of Firm
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CB ☐ A/E or E/A
CC ☐ Interior Design/Space Planning
CD ☐ Urban Planning/Architecture
CE ☐ Planning
CF ☐ Contractor/Builder/ Construction Management
CG ☐ Facility Management/ Development
CH ☐ Government
CI ☐ Educational
CJ ☐ Consulting
CK ☐ Other

Firm Employees (all offices)
DA ☐ 1
DB ☐ 2 9
DC ☐ 10 - 24
DD ☐ 25 - 49
DE ☐ 50 - 100
DF ☐ More than 100

Buying Influence
EA ☐ *Final Decision
EB ☐ Specify
EC ☐ Recommend
ED ☐ No Role

Location of Firm's Work
FA ☐ Local
FB ☐ Regional
FC ☐ National
FD ☐ International

Primary Type of Work
GA ☐ Commercial
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GF ☐ Transportation
GG ☐ Non-construction Projects

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AC ☐ Networking with Colleague
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Have you attended past conventions?
HA ☐ Yes, number attended ____
HB ☐ No

IN THE UNITED STATES BANKRUPTCY COURT FOR THE DISTRICT OF DELAWARE

In re:

OWENS CORNING, et al.,

Debtors.

Chapter 11

Case No. 00-03837 (JKF)

Jointly Administered

Notice of Last Day to File Claims

On October 5, 2000, the following debtors (each a "Debtor" and collectively the "Debtors") commenced cases under chapter 11 of title 11 of the United States Code (the "Bankruptcy Code"):

Owens Corning (Case No. 00-3837) – f/k/a Owens Corning Fiberglas Corp.; dba Owens Corning Corp.; Cultured Stone, a division of Owens Corning (after 12/31/99); OEM Solutions Group; Owens Corning Tanks; O/C Tanks Corporation; Western Fiberglass, Inc.

CDC Corporation (Case No. 00-3838)

Engineered Yarns America, Inc. (Case No. 00-3839)

Falcon Foam Corporation (Case No. 00-3840)

Integrex (Case No. 00-3841) – dba Integrex HOMExperts; Integrex Testing Systems LLC; HOMExperts LLC; Owens Corning HOMExperts

Fibreboard Corporation (Case No. 00-3842)

Exterior Systems, Inc. (Case No. 00-3843) – dba Norandex, Inc.; Fabwel Composites; AmeriMark Building Products, Inc.; Fabwel, Inc.; Fabwel Plastics; Owens Corning Metal Systems; Norandex/Reynolds; Norandex/Reynolds Distribution Company; Norandex Bldg. Products; Reynolds Bldg. Products; Norandex Installation Company; Aristocrat Windows; Weather-Tite

Integrex Ventures LLC (Case No. 00-3844)

Integrex Professional Services LLC (Case No. 00-3845)

Integrex Supply Chain Solutions LLC (Case No. 00-3846)

Integrex Testing Systems LLC (Case No. 00-3847)

Homexperts LLC (Case No. 00-3848)

Jefferson Holdings, Inc. (Case No. 00-3849)

Owens-Corning Fiberglas Technology Inc. (Case No. 00-3850)

Owens Corning HT, Inc. (Case No. 00-3851)

Owens-Corning Overseas Holdings, Inc. (Case No. 00-3852)

Owens Corning Remodeling Systems, LLC (Case No. 00-3853)

Soltech, Inc. (Case No. 00-3854)

A more complete list of certain of the Debtors' current and former business and legal names can be obtained by calling 1-866-773-8653 or by visiting the website at http://www.occlaims.com.

PLEASE TAKE NOTICE THAT on November 27, 2001 the United States Bankruptcy Court for the District of Delaware issued an Order establishing April 15, 2002 at 4:00 p.m. prevailing Pacific time (the "General Claims Bar Date") as the last date and time to file a proof of claim against any of the Debtors.

1. WHO MUST FILE A PROOF OF CLAIM

You MUST file a proof of claim if you have a claim against a Debtor that: (a) arose prior to October 5, 2000 including but not limited to claims based upon: (i) the purchase of products by, or the provision of any services to, any of the Debtors; (ii) property damage arising from the presence of asbestos-containing or other products in buildings; (iii) acts or omissions by any of the Debtors including without limitation claims based on indemnification, contribution, reimbursement, subrogation and guarantees; (iv) environmental liabilities; and/or (v) the sale, manufacture, distribution, installation and/or marketing of products by any of the Debtors, including without limitation underground or above-ground storage tanks, roofing shingles, vinyl siding, metal siding and products containing glass fibers, synthetic vitreous fibers, asphalt and/or resins; and (b) is not an Excluded Claim (as hereinafter defined).

Under Section 101 (5) of the Bankruptcy Code and as used in this Notice, the word "claim" means: (a) a right to payment, whether or not such right is reduced to judgment, liquidated, unliquidated, fixed, contingent, matured, unmatured, disputed, undisputed, legal, equitable, secured, or unsecured; or (b) a right to an equitable remedy for breach of performance if such breach gives rise to a right to payment, whether or not such right to an equitable remedy is reduced to judgment, fixed, contingent, matured, unmatured, disputed, undisputed, secured or unsecured. Because of this broad definition, acts or omissions of the Debtors that arose before October 5, 2000 may give rise to claims against them notwithstanding that such claims may not have matured or become fixed or liquidated prior to such date.

THE GENERAL CLAIMS BAR DATE DOES NOT APPLY TO ASBESTOS-RELATED PERSONAL INJURY CLAIMS AND ASBESTOS-RELATED WRONGFUL DEATH CLAIMS, whether or not such claims (a) have been resolved or are subject to resolution pursuant to a settlement agreement, including but not limited to a National Settlement Program ("NSP") Agreement, or (b) are based on a judgment, but does apply to asbestos-related claims for contribution, indemnity, reimbursement or subrogation. Asbestos-related personal injury claims and asbestos-related wrongful death claims will be subject to a separate claim submission process. Asbestos-related personal injury claims and asbestos-related wrongful death claims should not be filed at this time.

2. EXCLUDED CLAIMS

You should not file any proof of claim that is an Excluded Claim. "Excluded Claims" include the following types of claims:

- An asbestos-related personal injury claim or asbestos-related wrongful death claim, whether or not such claim (a) has been resolved or is subject to resolution pursuant to a settlement agreement, including but not limited to a National Settlement Program ("NSP") Agreement or (b) is based on a judgment;
- A claim that *already* has been properly filed with the Clerk of the United States Bankruptcy Court for the District of Delaware or the Claims Agent (as defined below);
- A claim that is: (i) listed on the Debtors' Amended Schedules; (ii) *not* described in the Amended Schedules as "disputed," "contingent," or "unliquidated"; and (iii) in the same amount and of the same priority as set forth in the Amended Schedules;
- An administrative expense of any Debtor's chapter 11 case under section 503(b) of the Bankruptcy Code;
- A claim of an employee of any of the Debtors for deferred compensation;
- A claim of a retired employee of any of the Debtors for retirement benefits, including deferred compensation, pension and medical benefits;
- A claim of an employee of any of the Debtors for pre-petition worker's compensation benefits; and
- A claim that has been subject to a bar date established by Order of the Court other than the General Claims Bar Date Order.

A more complete list of Excluded Claims can be obtained by calling 1-866-773-8653 or by visiting the website at http://www.occlaims.com.

3. WHEN AND WHERE TO FILE

To file a claim, you must do the following:

- Return your completed Proof of Claim Form(s) to the Claims Agent no later than 4:00 p.m., prevailing Pacific time, April 15, 2002. Proof of Claim Forms will be deemed filed only when actually received by the Claims Agent. Proof of Claim Forms submitted by electronic submission or by facsimile will not be accepted and will not be deemed filed.
- Proof of Claim Form(s) should be sent to the Claims Agent at the following address:
  Claims Agent
  In re Owens Corning, et al.
  c/o Robert L. Berger & Associates LLC
  16161 Ventura Boulevard
  PMB 517
  Encino, CA 91436

4. CLAIMS AGAINST MULTIPLE DEBTORS

If you assert claims against more than one of the Debtors, you must file a separate Proof of Claim Form asserting each such claim against the appropriate Debtor. If you file a single Proof of Claim Form asserting a claim against more than one Debtor, your claim will be deemed to have been filed against the first Debtor identified only. All additional identified Debtors will be disregarded.

5. EFFECT OF NOT FILING A CLAIM

IF YOU ARE REQUIRED TO FILE A PROOF OF CLAIM FORM AND DO NOT DO SO ON OR BEFORE THE GENERAL CLAIMS BAR DATE OF APRIL 15, 2002, YOU WILL BE FOREVER BARRED, ESTOPPED, AND ENJOINED FROM ASSERTING SUCH CLAIM AGAINST ANY OF THE DEBTORS AND SUCH DEBTORS AND THEIR PROPERTY WILL BE FOREVER DISCHARGED FROM ANY AND ALL INDEBTEDNESS OR LIABILITY WITH RESPECT TO SUCH CLAIM, AND YOU WILL NOT BE PERMITTED TO VOTE ON ANY PLAN OF REORGANIZATION OR PARTICIPATE IN ANY DISTRIBUTION IN SUCH DEBTOR'S CHAPTER 11 CASE ON ACCOUNT OF SUCH CLAIM OR TO RECEIVE FURTHER NOTICES REGARDING SUCH CLAIM.

To obtain a Proof of Claim Form: (a) call:

1-866-773-8653; or (b) visit the website at http://www.occlaims.com.

BY ORDER OF THE COURT, JUDITH K. FITZGERALD, UNITED STATES BANKRUPTCY JUDGE
PLEASE DO NOT CALL OR SEND REQUESTS FOR PROOF OF CLAIM FORMS TO THE COURT.

SAUL EWING LLP, Attorneys for Debtors and Debtors-in-Possession

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This comprehensive resource contains technical discussions, sample projects, details and specifications on the application of architectural copper products. Details are AutoCAD®-compatible for easy importing, or printable as PDF documents. Specifications are CSI and AIA MasterSpec®-formatted. Copper alloy color charts, along with supplier, manufacturer and contractor databases included. $20. Call Copper Development Association: 888-427-2411.

CDA

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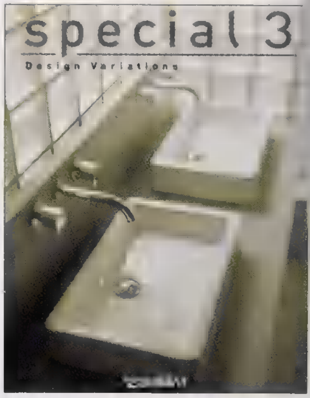
Duravit



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Duravit

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L. M. Scofield Company

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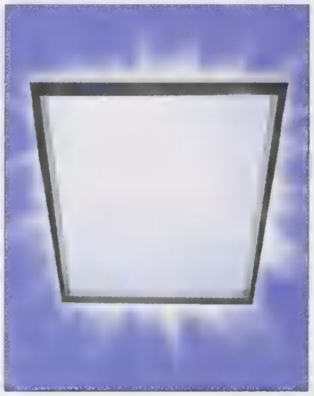
Insulated Translucence in Glass



Quality buildings can now have all the benefits of insulated translucent glazing PLUS the timeless beauty & durability that comes only from glass. Unlike plastic solutions, SOLERA™ insulated translucent glazing units deliver over 70% light transmittance plus U values of .25 to .14. Curtain wall, sloped, skylights….glass to architectural spec. Call 902-794-2899 or visit www.advancedglazings.com

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SMC®NOC Vision™... A 24/7 Console Solution

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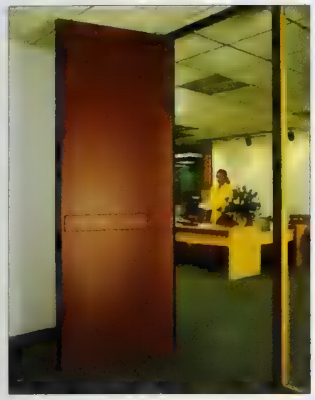
Applications



The new flush exit device is designed for use on TOTAL DOORS in single, pairs and double egress pairs. Ideal for corridor & elevator lobby applications in all commercial facilities. The exit device allows continuous, uninterrupted sightlines in corridors when doors are pocketed in the open position. Its quiet operation is ideal anywhere noisy hardware is a problem. TOTAL DOORS can be retrofitted into existing door frames, saving time & expense.

Openings

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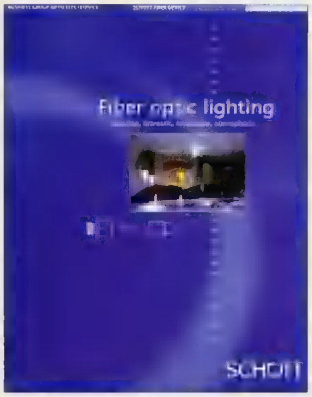
Schott Fiber Optic Lighting Catalog



Glass and plastic fiber optic lighting products from Schott are featured in a new full-color catalog. Detailed information on end and side emitting harnesses, light sources, end fittings, and post and paver lamps was developed for retail, conservation, decorative, architectural and landscape lighting applications and OEM custom solutions.

Schott-Fostec, LLC

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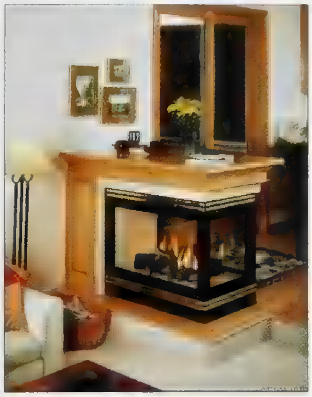
Three-Sided Fireplace for Unlimited Installations



Heat-N-Glo introduces model PIER-TRC, a three-sided direct vent fireplace that can be terminated vertically or horizontally to accommodate nearly any application. The PIER-TRC is perfect as a room divider, bar, end of counter or a wide variety of creative installation possibilities. As with all Heat-N-Glo fireplaces, the PIER-TRC can be operated by remote control for the ultimate in convenience. Call 888-427-3973.

Heat-N-Glo

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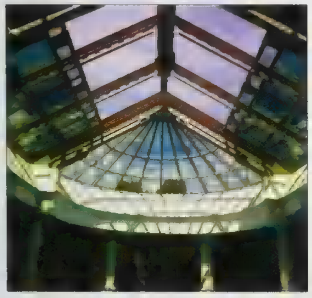
Retractable Roof Enclosures & Skylights



Custom designed retractable roof panels and operable skylights create year-round settings. At the touch of a button, motorized panels retract to open 50% of the roof area, letting in sunshine and fresh air. Maintenance-free thermally broken aluminum framing. Enclosures ideal for restaurants, patios, pools and atriums. For more information, call 800-267-4877, Email: openaire@openaire.com or visit www.openaire.com

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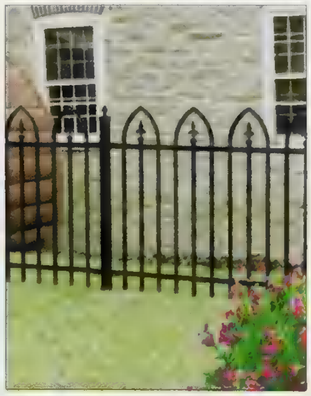
Ornamental Picket Fence with a Purpose



Monumental Iron Works™ is a modular system with the solid look & feel of authentic wrought iron. When assembled, it creates one of the strongest ornamental fence systems on the market. Welding processes are eliminated to avoid red rust problems. MIW utilizes a duplex coating of polyester resin over hot-dip galvanized steel for corrosion protection. Master-Halco, Baltimore, Maryland 21040. 410.676.2744 Email: spec@fenceonline.com Web site: www.fenceonline.com

Monumental Iron Works™

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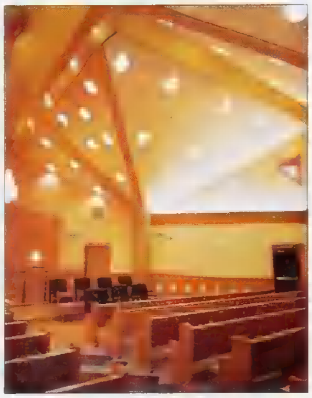

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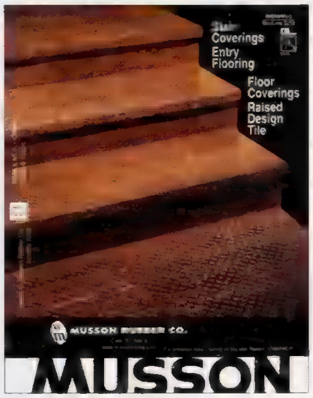

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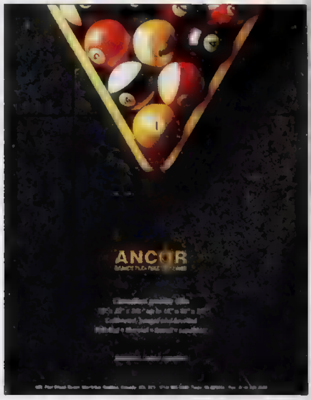
Ancor Granite Tile



Ancor produces over fifty No. American and Imported granites in a full range of colors and finishes for residential, commercial and institutional use. Standard format is 12 x 12 x 3/8"; other sizes up to 18 x 18 x 1/2" available. Honed finish tile is particularly suitable for high traffic commercial areas, 435 Port Royal West, Montreal, Quebec, H3L2C3, Canada. Ph: 514-385-9366, Fax: 514-382-3533.

Ancor Granite

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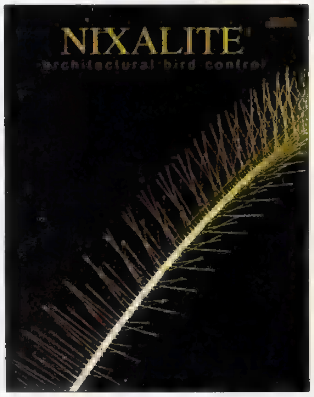
Architectural Bird Control



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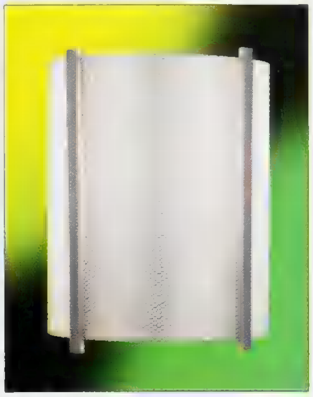

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OCL

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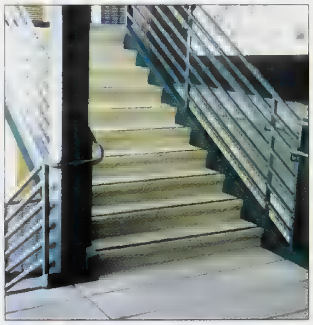
Stair treads with Landing



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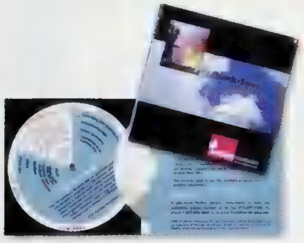

The new Quick-Spec from InterEdge Technologies offers a fast, finger-tip reference to a complete range of fire & safety rated products. For in-depth product information & options, manufacturing video & CSI specifications just slip out the CD & go. It's a must for those who don't have time to wade through the office library or search the web for clear fire & safety glazing solutions.Fax:415-289-0326, email: interedgemsf@aol.com; www.firesafe-glass.com.

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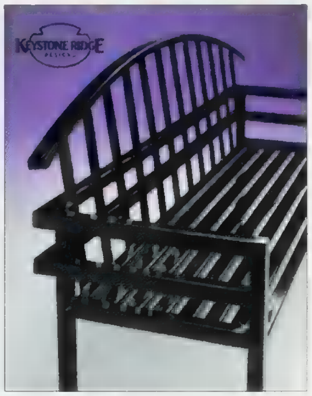

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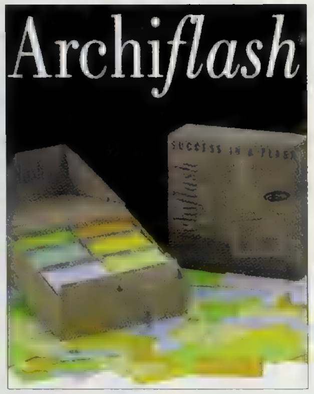

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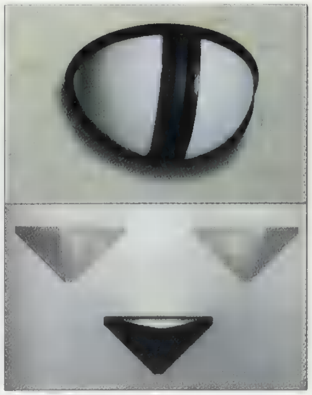

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Keystone Retaining Wall Systems

KEYSTONE RETAINING WALL SYSTEMS
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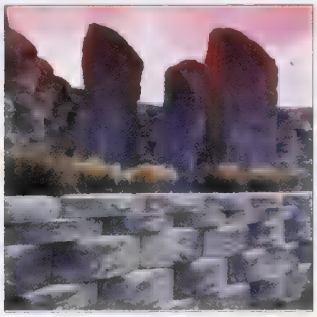

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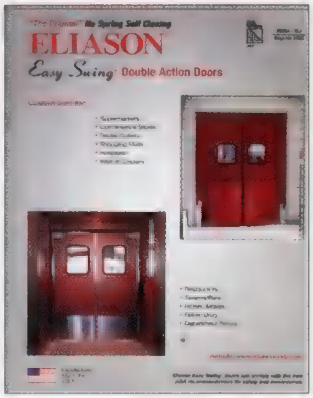
Eliason Easy Swing® Double Action Doors



Eliason, the original & only manufacturer of Easy Swing® Doors, has announced the availability of their new 2002 Price Spec catalog. Doors are color illustrated with complete specifications and prices. Available in a variety of sizes, styles and decor options. Doors are sold direct and the price catalog is sent no charge. Eliason Corporation, P.O. Box 2128, Kalamazoo, MI 49003. Tel: 800-828-3655 Fax: 800-828-3577 Email: doors@eliasoncorp.com Web site: www.eliasoncorp.com

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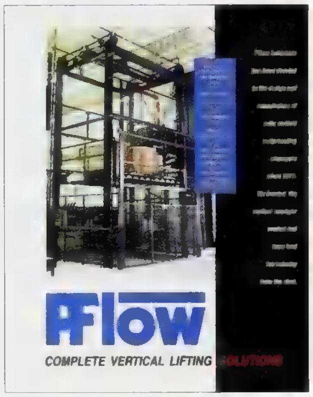
Pflow Lifts Safely Move Materials Between Levels



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Prepare contract drawings with details, sections, plans, elevations, notes, schedules utilizing AutoCAD Release 14. Design systems & perform calculations; coordinate drawing preparation; plan layout of projects & integrate engineering elements into unified design; prepare scale drawings & contract documents for building contractors; administer construction contracts; conduct periodic on-site observation during construction to monitor compliance with plans; check documents for compliance with client, code, & construction requirements; Bachelors in architecture plus two years experience. 40 hpw, M-F, $39,000/yr. Contact Dorine A. Vogel PHR, Human Resources, Fanning/Howey Assoc., Inc., 1200 Irmscher Blvd., Celina, OH 45822. Telephone: 419-586-2292.

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Architectural firm specializing in health care and education seeking the following: Senior architect iwth minimum of ten (10) years experience with full responsibility for large projects and possess organizational and leadership skills. Must be licensable in the State of Michigan. Competitive salary and fringe benefits based on qualifications and experience. Send or fax resume to: Human Resource Manager, Gunn Levine Associates, 726 Lothrop, Detroit, Michigan 48202. Fax (313) 873-8090.

INTERN ARCHITECT

Under supervision of a licensed architect to perform architectural design of buildings, including floor plan, elevations, large scale sections and details, using AutoCAD 14 &2000, to develop design presentation work using professional watercolor rendering, pencil drawing, and computer modeling and rendering programs including AutoCAD 2000, 3D Studio Viz, Form-Z, Photoshop and CoreDraw, to conduct site analysis and programming, field measurement and supervision and prepare architectural construction documents, architectural and engineering specifications for commercial buildings. Req.: Master degree in Architecture and 1-year exp. in job offered, proficiency in professional watercolor rendering, 3D computer modeling and rendering and AutoCAD 2000. $42,000/yr, 40hrs/wk. Submit resume to Attn: Ray Kimsey, 3060 Peachtree Rd NW, Atlanta, Georgia 30305. Job Code: NBA-JJ02.

JUNIOR ARCHITECT

Under closed supervision of licensed architects: Research & design building projects, Plan layout, Prepare scale drawings. Bachelor in Architecture required. Jobsite: Manhattan Beach, CA. Fax resumes to Tomaro Architecture Inc. at (310) 318-9400 Attn: A. McKaig

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Assist licensed architect with detailed drawings of architectural designs and plans using AutoCAD and freehand. BA in Architecture + 2 yrs exp. in job or in field req. Send ad/resume to Rockefeller/Hricak Architects, 4052 Del Rey Avenue, Suite 102, Venice, CA 90292.

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Prepare detailed drawings of architectural designs and plans for buildings and structures primarily in Japan. Coordinate projects with clients in Japan. BA in architecture + 2 years experience in job offered. Send ad/resume to Garness/Feldman Architecture and Landscape, 3791 Wade Street, Los Angeles , CA 90066.

ARCHITECTURAL DESIGNERS (JOB CAPTAIN)

Assist licensed architect with detailed drawings of architectural designs and plans using AutoCAD and freehand. MA in Architecture + 2 yrs exp. in job or in field req. Send ad/resume to Rockefeller/Hricak Architects, 4052 Del Rey Avenue, Suite 102, Venice, CA 90292.

ARCHITECTURAL DESIGNER

Under the supervision of a licensed architect, prepare architectural designs and specifications. Req: Bachelor degree in Architecture and 6 months experience in 2D & 3D Autocad Software. Send resume to Salvatore Caruso Design Corp, 1475 Washington Street, Santa Clara, CA 95050.

ARCHITECTS

Chicago-based architectural/design firm seeks experienced architects to plan and design building & interior projects. Tools: CAD, Photoshop. Mail resumes only (no phone calls) to: VOA Associates, Inc., 224 S. Michigan Ave., Suite 1400, Chicago, IL 60604, Attn.: P. T. Adams

FACULTY POSITIONS

ASSISTANT OR ASSOCIATE PROFESSOR OF ARCHITECTURE

The Department of Architecture at Judson College invites applications for the position of Assistant or Associate Professor of Architecture, a full-time tenure-track position beginning Fall 2002 or Fall 2003. Candidates should be qualified to teach a design studio and teach in a related area in both the Graduate and Undergraduate programs. Applicants should demonstrate leadership potential in design and theory. Applicants should possess a Master of Architecture or a higher academic degree and either strong teaching experience or qualifications that indicate significant potential for outstanding research/creative activity and continued achievement together with teaching. Architectural registration is preferred. Judson College is an Evangelical Christian liberal arts and professional programs college located in Elgin, Illinois, 40 miles from downtown Chicago. We seek candidates who are committed to an evangelical Christian worldview and seek to integrate their faith within the practice and discipline of architecture. Women and minorities are strongly encouraged to apply. The Division of Art, Design and Architecture consists have 12 full-time and 12 part-time faculty serving over 200 majors. The professional architectural program was formally granted candidacy for NAAB accreditation effective January 1, 2000. We are presently in the fifth year of the program's existence and there are approximately 125 students enrolled in the program. The search committee will begin reviewing applications after March 1, 2002. Please send your resume, a complete set of transcripts, a brief portfolio of your work and a short statement of your Christian faith and the integration of your faith within the liberal arts and architectural discipline to: Architecture Search Committee, C/o Jack A. Kremers, AIA, Chair, Department of Architecture, Judson College, 1151 North State Street, Elgin IL 60123. (847) 695-2500 ext. 3351. Fax: 847-695-3353. jkremers@judson-il.edu

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CORNELL UNIVERSITY
DEPARTMENT OF ARCHITECTURE

The Department of Architecture at Cornell University is building up expertise in the computer-aided design and computer graphics areas, and is seeking to make up to three full-time tenure-track or tenured appointments in these areas. One position must relate closely with the Program of Computer Graphics, an interdisciplinary center which advises and educates graduate students in computer science. The other two positions, one of which is jointly sponsored by the Faculty of Computing and Information in the area of Digital Arts and Graphics, are dedicated to undergraduate and graduate teaching in the architecture department. Applicants with the following specializations are encouraged to apply:

SPECIALIZATION IN COMPUTER GRAPHICS:

- Ability to supervise graduate students in computer graphics (Ph.D. and M.S. programs)
- Ability to teach computer graphics and computer-aided design within the professional degree programs of the Department of Architecture
- Ability to develop new software programs for architecture

The position involves research and teaching in computer graphics. Most graduate research occurs in the Program of Computer Graphics, an inter-disciplinary graphics center dedicated to the development of interactive graphics techniques and the uses of these techniques in a variety of applications. Current projects involve three-dimensional, photorealistic rendering within the fields of architecture, structural engineering, engineering mechanics, medicine, and lighting design. A graduate degree in computer science or computer-aided design is required (Ph.D. desirable).

SPECIALIZATION IN COMPUTER-AIDED DESIGN:

- Ability to teach courses in computer- aided design and/or digital media
- Ability to teach architectural design studio with emphasis on computer-aided design and digital media.

The successful candidate must demonstrate exceptional skills in the integration of digital technology with architectural design. The requirements for the position include demonstrated experience integrating digital technology with teaching and/or architectural practice, and the ability to produce significant research. A professional degree in architecture and a graduate degree in a closely-related field is required. Desirable qualifications include: architectural practice, digital media experience, teaching experience, and the ability to develop new software programs for architecture. Applicants should send a letter of interest, curriculum vitae, and contact information for three references to: Professor Jonathan Ochshorn, Associate Chair, Department of Architecture, Cornell University, 143 E. Sibley Hall, Ithaca, NY 14853. Review of applications will begin immediately and continue until the positions are filled. The appointments are anticipated to begin July 1, 2002 with teaching commencing in Fall 2002.

Cornell University is an Equal Opportunity/ Affirmative Action Employer and is strongly and actively commited to diversity within its community. Women and minority candidates are encouraged to apply.

THE UNIVERSITY OF TEXAS AT AUSTIN SCHOOL OF ARCHITECTURE FACULTY POSITIONS OPEN

The University of Texas at Austin School of Architecture invites applicants for two positions at the rank of assistant professor, starting in the fall of 2002. The school is looking for candidates whose strength is design and whose ambition is to reach and teach at the forefront of architectural design as grounded in human experience. Special interest/ expertise in contemporary construction or interior design will be a plus, though not absolutely necessary. Interested individuals should send a letter of interest and self-description, together with a few representations of their work, to Michael Benedikt, Chair, Faculty Search Committee, School of Architecture, The University of Texas at Austin, Austin, Texas 78712, before March 1, 2002. Selected applicants will be asked for more information. Austin is one of America's most vibrant and livable cities, with the University of Texas at Austin—an Equal Opportunity Employer—at its heart. Offering a working environment second to none as well as competitive salaries, the School of Architecture consistently ranks in the top ten in the nation. We seek to make it better yet. For more information, visit www.ar.utexas.edu.

KNOWLTON SCHOOL OF ARCHITECTURE THE OHIO STATE UNIVERSITY

The Architecture Section of the Knowlton School of Architecture invites applications for two tenure-track positions at the rank of Assistant Professor and one position as The Howard E. LeFevre '29 Fellow. Applications will be reviewed beginning February 28, 2002 and will continue until the positions are filled. All three positions start in the fall of 2002. The Ohio State University is an Equal Opportunity, Affirmative Action Employer. For the tenure-track positions, the Section seeks candidates with strengths in design and related technologies: construction, structures, and/or fabrication. Candidates must hold a Master of Architecture and/or an advanced post-professional degree in architecture and demonstrate an ability to disseminate their work. Responsibilities include studio instruction and seminar, lecture or workshop courses. In addition to teaching, candidates are expected to engage in independent work: creative practice, research, and publication. Service to the school, university, and larger community is also integral to a tenure-track appointment. Additional school information is located at http://knowlton.osu.edu. Applicants should send a letter of intent stating teaching interests, a curriculum vita, a listing of three references, a web site address (if applicable), and a portfolio of not more than 10 pages to: Faculty Search Committee, The Knowlton School of Architecture, 109 Brown Hall, 190 West 17th Avenue, Columbus, Ohio 43210; email: cadwell.1@osu.edu. The Howard E. LeFevre '29 Fellowship provides a nine-month residency for an emerging practitioner to develop a project, produce a monograph, and teach an undergraduate design studio. A Graduate Research Assistant assists the Fellow in producing the proposed project and monograph. Applicants should send a letter of interest, a one page proposal of the project to be undertaken during the residency, a curriculum vitae, a listing of three references, a web site address (if applicable), and a portfolio of not more than 10 pages to: LeFevre '29 Fellowship, The Knowlton School of Architecture, 109 Brown Hall, 190 West 17th Avenue, Columbus, Ohio 43210; email: cadwell.1@osu.edu

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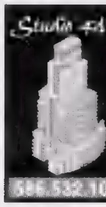

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For 5 years, *Architectural Record* has provided over one hundred building science stories that have qualified for continuing education credits at no cost to readers. *Record* quickly became the largest provider of continuing education credits and coursework. Your overwhelming response has been positive, with over 350,000 courses completed to date.

As of 2002, *Architectural Record* is required to process registrations for its continuing education courses. The overwhelming volume of courses and testing demanded an entirely new department to handle the work, for which *Record* is charging a modest fee of $10. A certificate of completion is now available.

Change is inevitable in this evolving climate, affected by individual state licensing bureaus as well as our professional society. You will find that this magazine is making efforts to deepen the content of every continuing education story, while keeping costs as low as possible.

We encourage you to continue to use and benefit from *Architectural Record*'s Continuing Education Program.

Robert Ivy, FAIA
Editor in Chief

Read Architectural Record for Credit

Important Changes to the AIA/Architectural Record Continuing Education Program Beginning January 1, 2002.

Architects can earn AIA Continuing Education learning units by reading designated articles and sponsored sections in ARCHITECTURAL RECORD and on Architecturalrecord.com, answering test questions on the Continuing Education Reporting Form and submitting forms for processing. Each month Architectural Record Continuing Education articles and sections are listed on the table of contents in the magazine and on the Web site. Most qualify for health, safety, welfare credit. Simply look for the sign.

In compliance with AIA Continuing Education guidelines, beginning with the January 2002 issue:

1. A separate Continuing Education Reporting Form must be completed for each continuing education article or section. The form's location is stated in each article. The correct answers to the multiple choice test questions must be circled on the Reporting Form along with the applicant's name, AIA number, and other contact information. A $10 processing fee payable by check or credit card must accompany each Continuing Education Reporting Form.

2. Beginning with the January 2002 issue, Reporting Forms will be mailed to the Architectural Record Continuing Education processing center address listed on the Reporting Form. All Continuing Education registrations will be forwarded to the AIA/CES records office at the University of Oklahoma for inclusion on AIA Continuing Education transcripts. (The date the AIA/CES records office ascribes to the LUs will be the last day of the month in which they receive notification from the provider that the LU credit has been earned.)

3. Certificates of completion: To comply with state licensing mandatory continuing education issues, RECORD has established a system to provide certificates of completion to participants who request this documentation. A passing score of 70% on the test answers is required for successful completion. You may request a certificate on each reporting form. We've changed our format to closely align with state licensing requirements.

4. AIA/CES-approved magazine articles and sections that are more than two years old can only be self-reported as part of a self-designed research project, not for HSW credit. Contact the AIA records office in Oklahoma for self-reporting: 800-605-8229. Articles and sections published within two years of this issue must use the AIA/CES Reporting Form in those issues and/or follow the instructions on the Web site.

If you have questions regarding the AIA/Architectural Record Continuing Education Program, e-mail *AReditorial@mcgraw-hill.com*.

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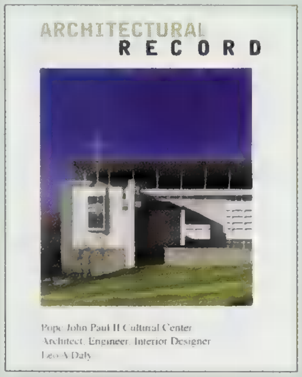

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Profile

Rosanne Haggerty: An uncommon groundskeeper

Interviewed by Randi Greenberg

In 1991, when Times Square seemed a permanent crime scene, Rosanne Haggerty envisioned a system that could save the neighborhood, its historic buildings, and—most importantly—its homeless people. As founder of Common Ground Community, she devised a service to aid the homeless by providing safe and affordable housing along with social support. The recipient of a 2001 MacArthur Fellowship, Haggerty says her goal is to complete her M.A. in Planning and Historic Preservation this year. It's been hard to find the time to finish her thesis—she's been busy overseeing the transformation of several decrepit hotels into residences to house more than 1,500 tenants, who she is also helping to ease back into the workforce.

Q: *Why is making renovations of old buildings and hotels the approach you've taken to create housing?* The original layouts of these buildings, many of which were once hotels, lend themselves well to SRO (single-room occupancy) facilities. The buildings contain common spaces that are important for community building. I'm personally interested in historic architecture of various types, so it's been a real treat to focus development energy for the homeless on buildings that can contribute so much to the neighborhood once they're restored. It's been a psychologically powerful tool to take down rundown hulks and restore and reclaim them as landmarks.

Why aren't more groups making more housing developments? It really comes down to political will and money and making the process easier. Money continues to go out to emergency-based approaches that cost a lot more than the permanent solutions we have been implementing. The good news is that we ultimately piece money together from public and private sources. The time it takes and the degree of difficulty is completely disproportionate to the staff resources a not-for-profit group has.

What role can architects play? An exciting challenge for the architectural community would be finding more affordable ways to build attractive housing and widening the spectrum of housing types available so we can get more people indoors and living in safety and with dignity in a place where they can move on with their lives—perhaps borrowing from other traditions.

Other traditions? For example, we are working on a new project that is currently used in Belfast and London. We're renovating a building for The Foyer Project. It provides a residential/job development center aimed at those coming out of foster care—a demographic that we find all too often pours more people into the homeless problem.

What can be done in other communities to launch SRO projects? My fantasy is that architects wouldn't wait for commissions or calls from groups but would actively engage the issue and the necessary groups. For instance, in England, a group called CRASH (Construction Industry for Single Homelessness) is comprised of socially minded architects and builders who rally expertise and contribute materials and labor for a project—they make the difference in a project happening or not.

How do you measure success? There are the tangible metrics—turnover, a tenant's progress onto something better, rent collection, decreased hospitalizations, and decreased need of emergency services. But there are other things that we are not able to quantify, such as the participation and spirit in group events. The ultimate barometer, however, is how people feel about the atmosphere when they walk into it. My coworkers and I, and the tenants, are rarely disappointed.

Photographed by André Souroujon at the Times Square Hotel SRO.

For more information about Common Ground, go to commonground.org.

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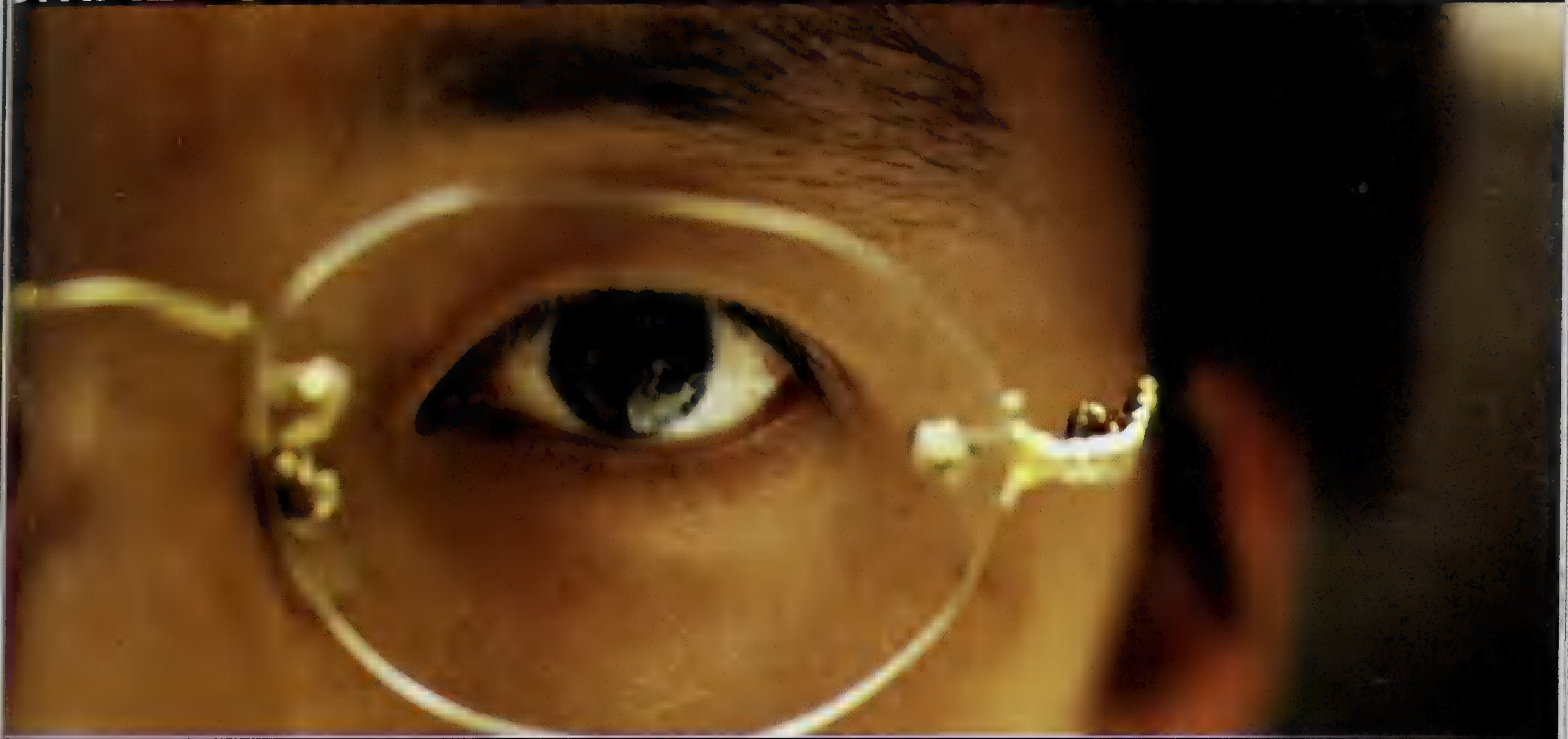

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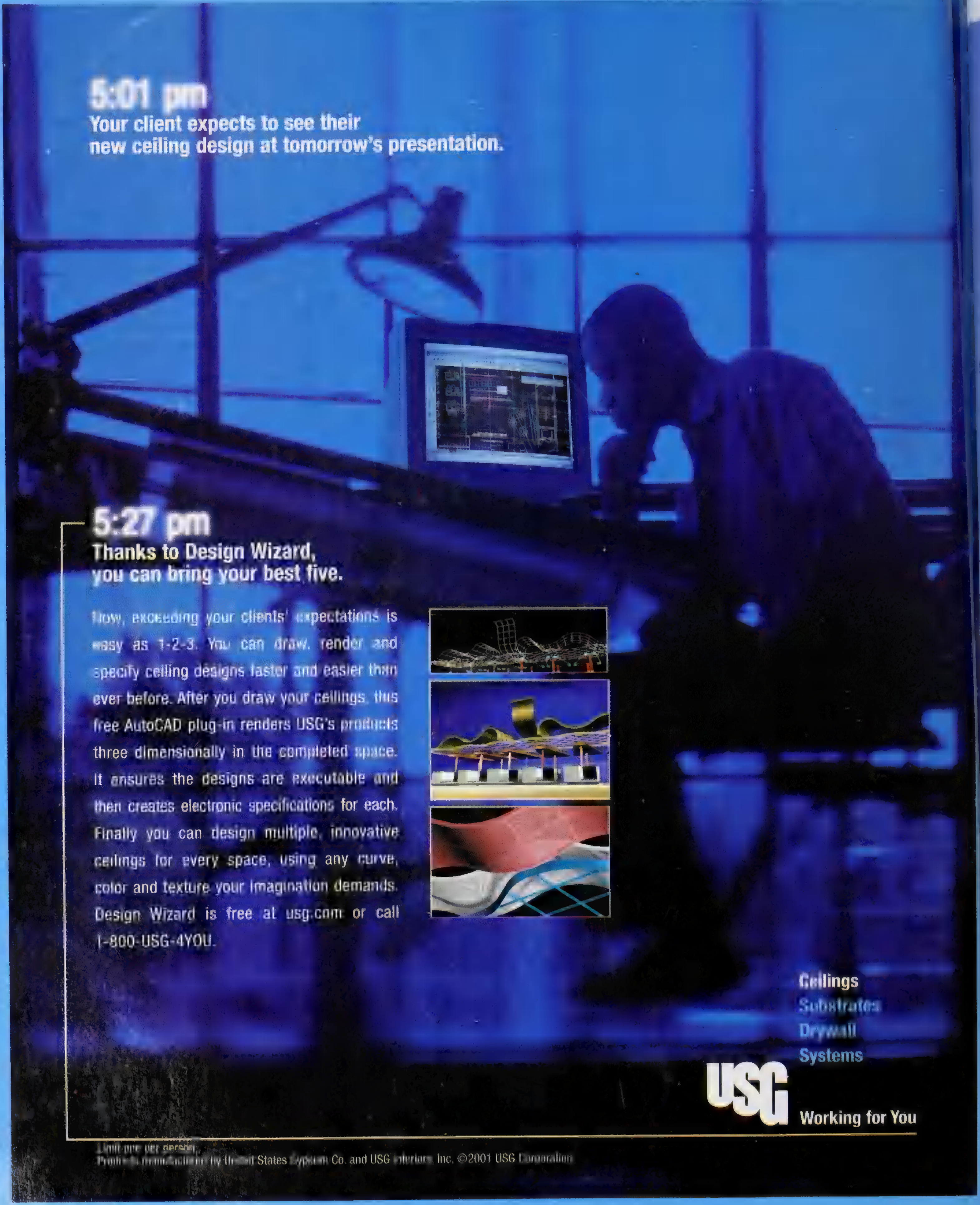

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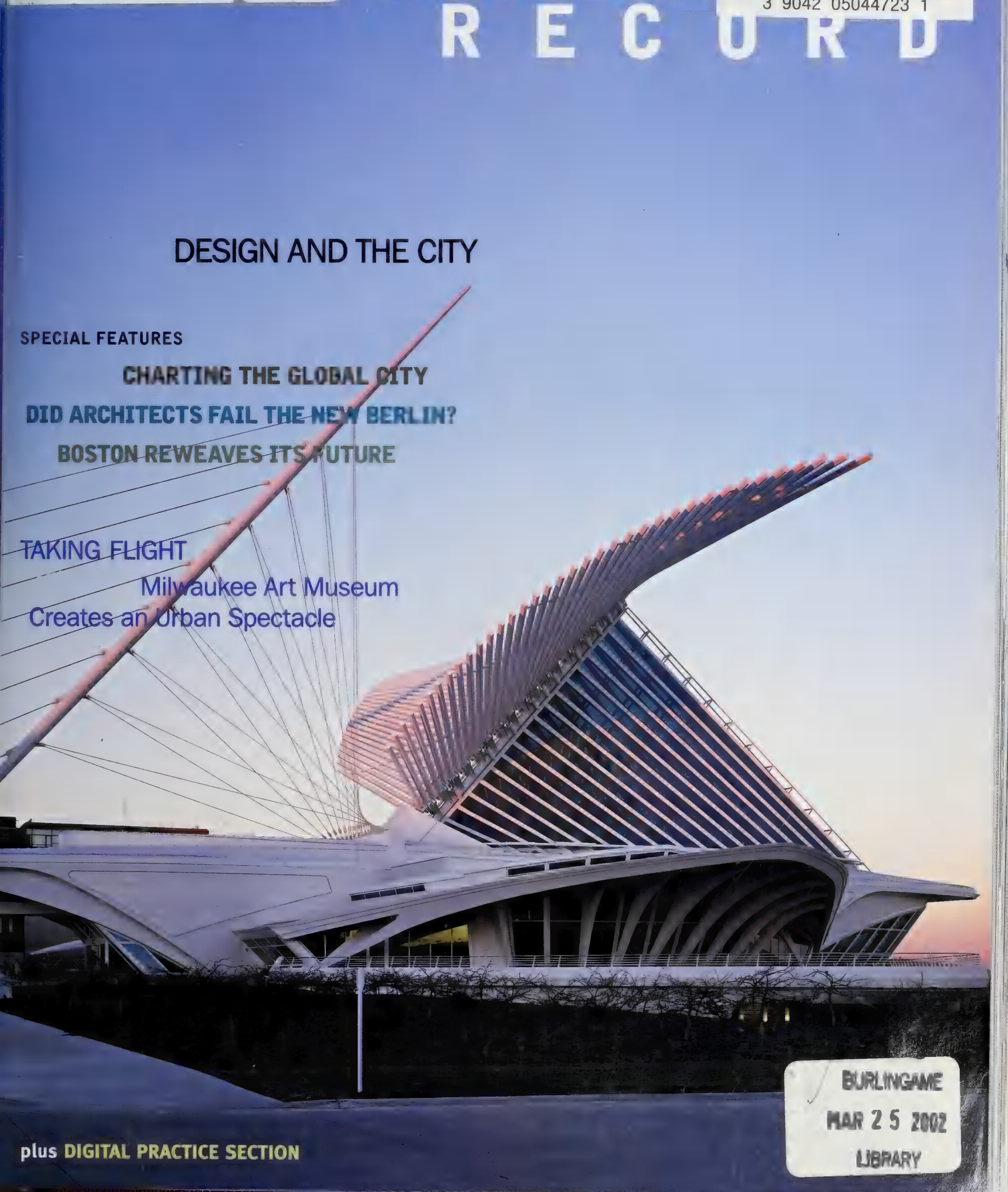

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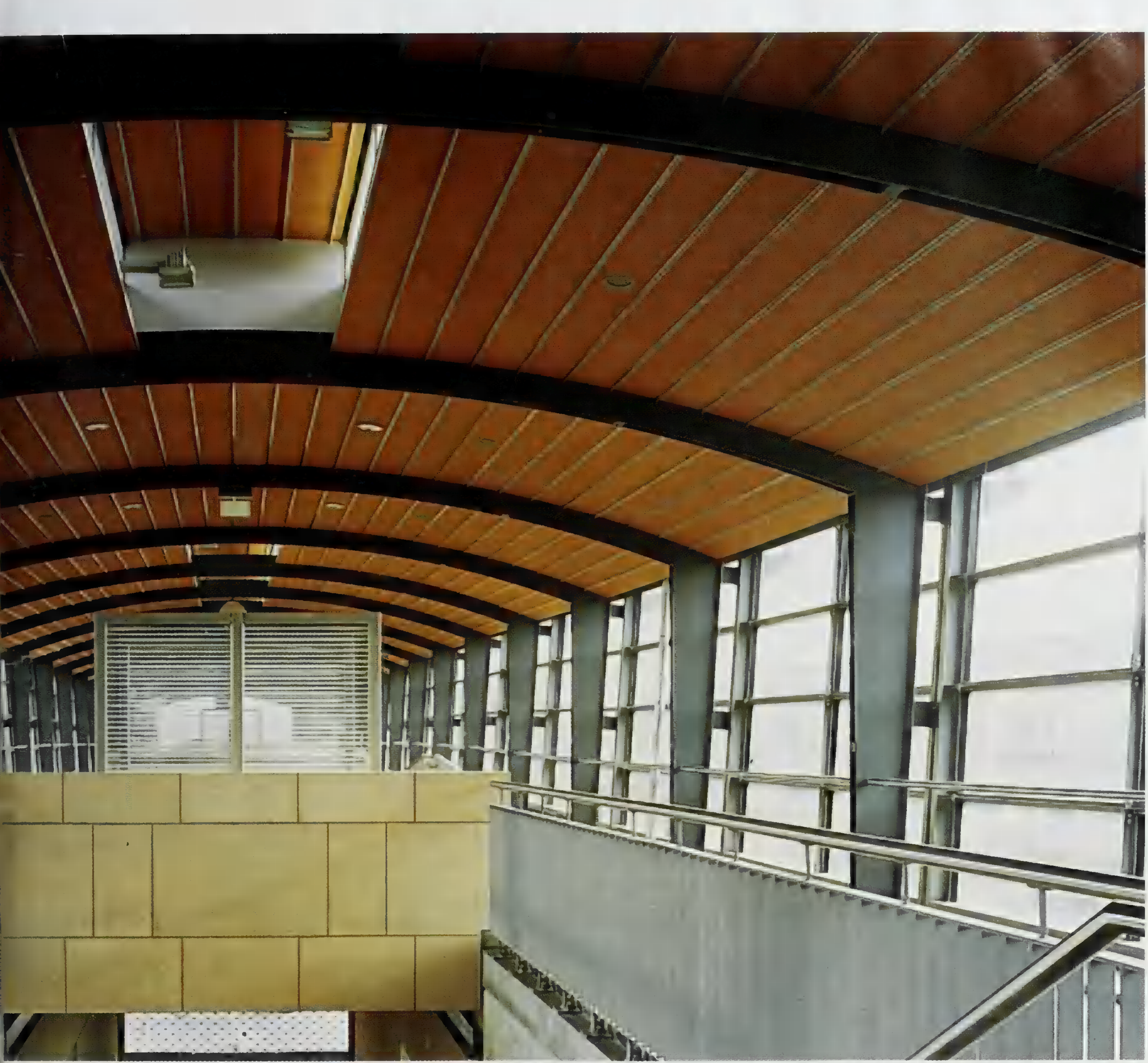

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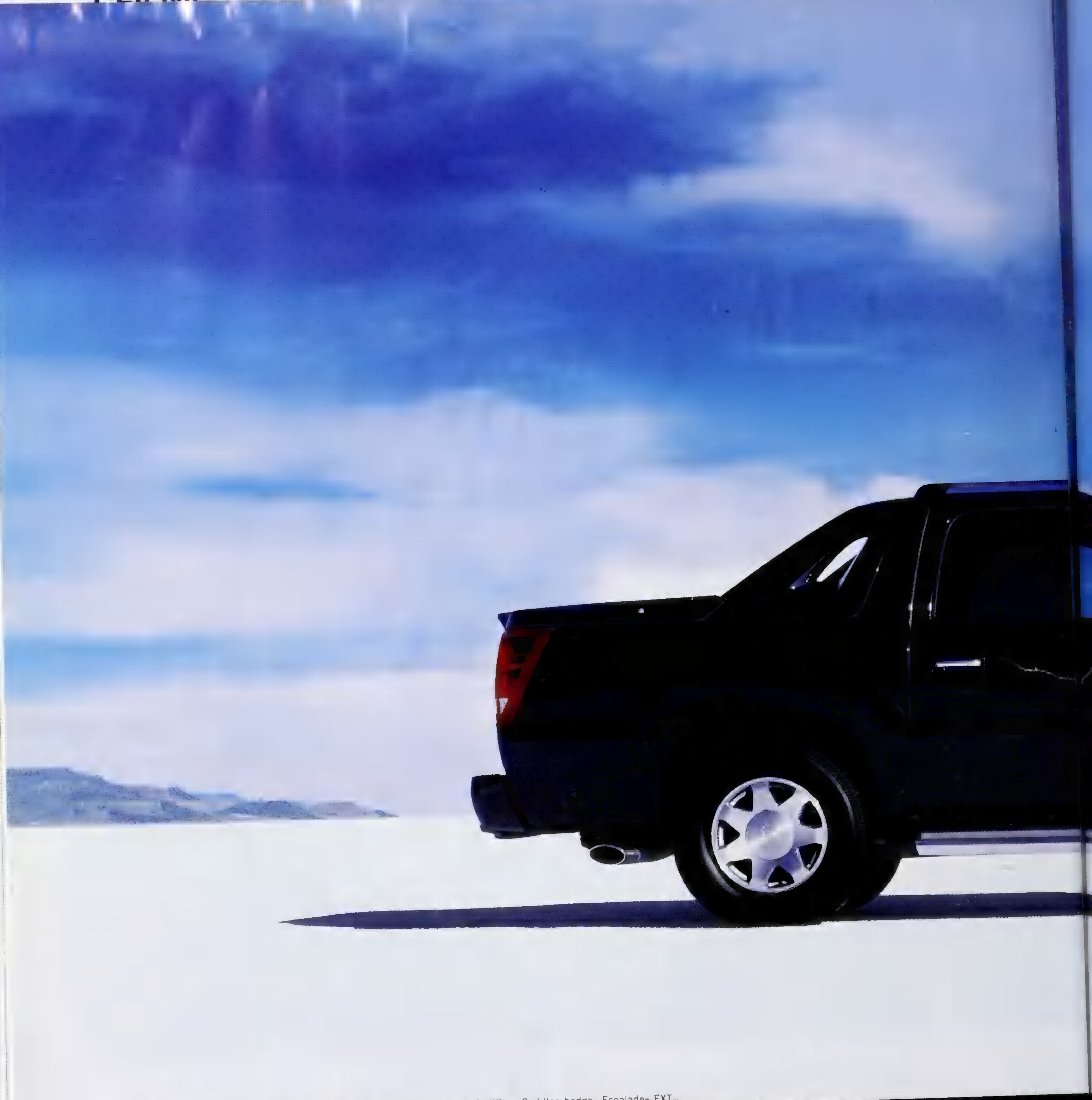

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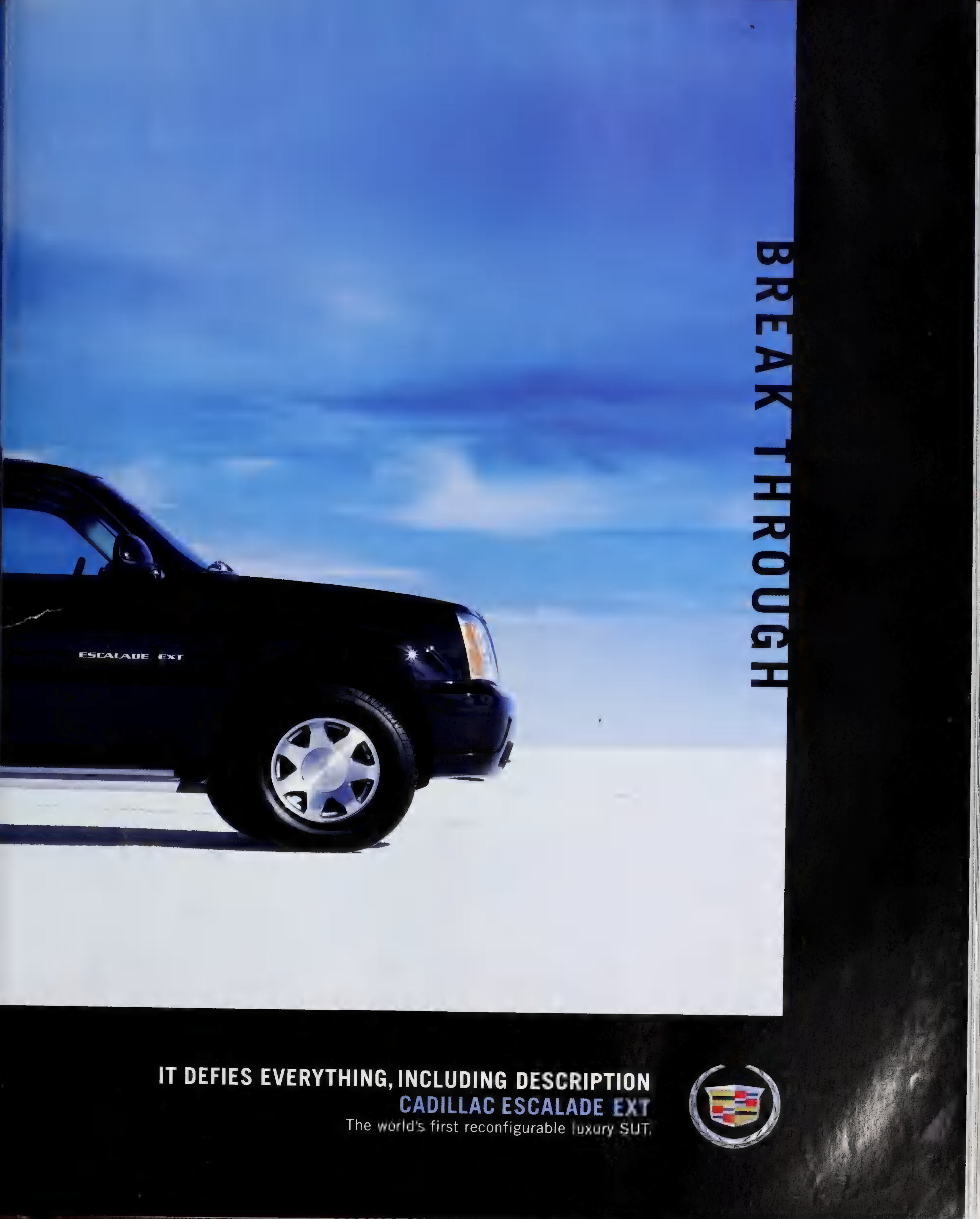
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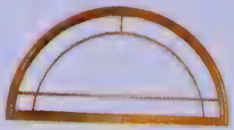

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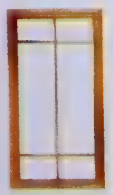

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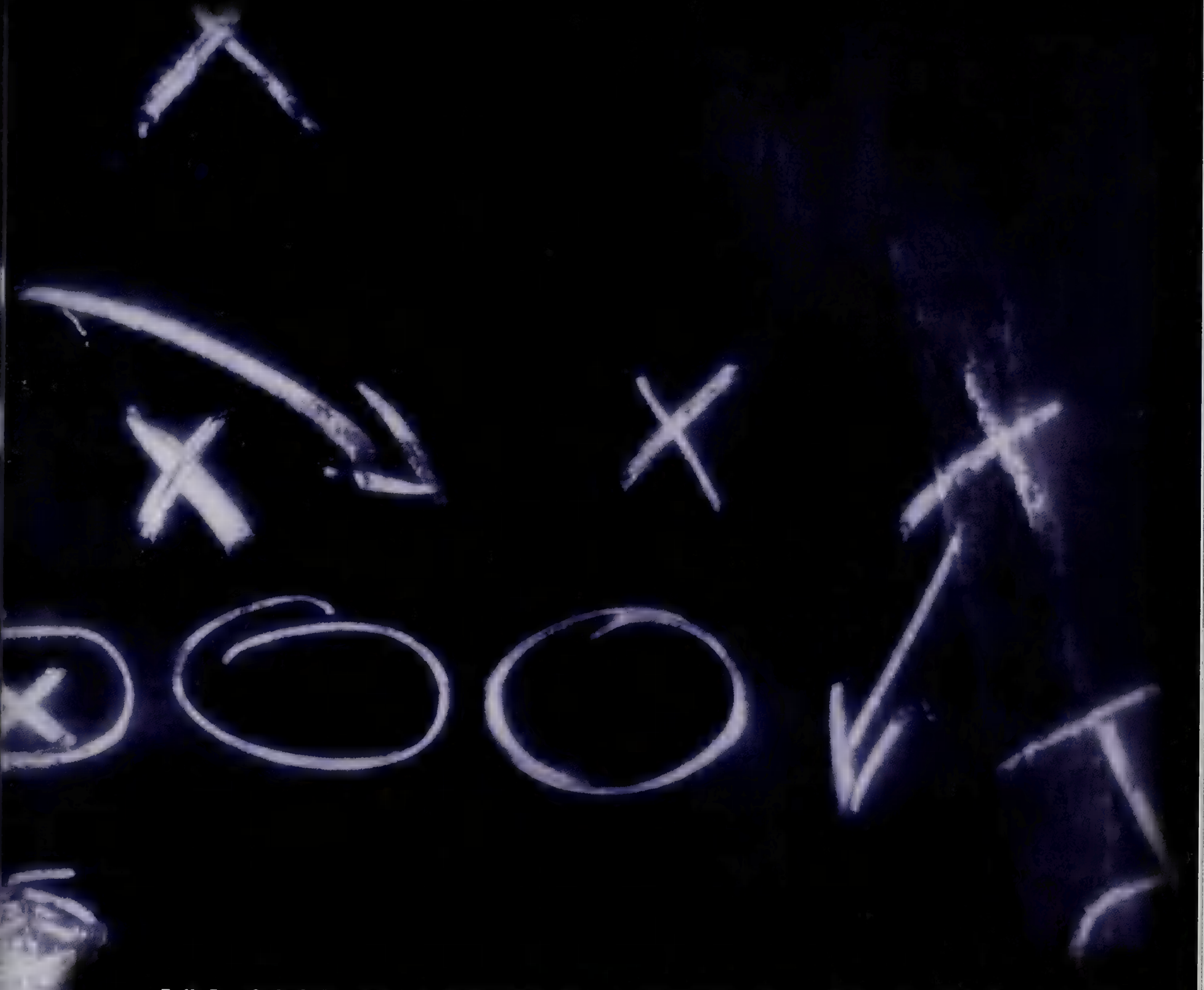

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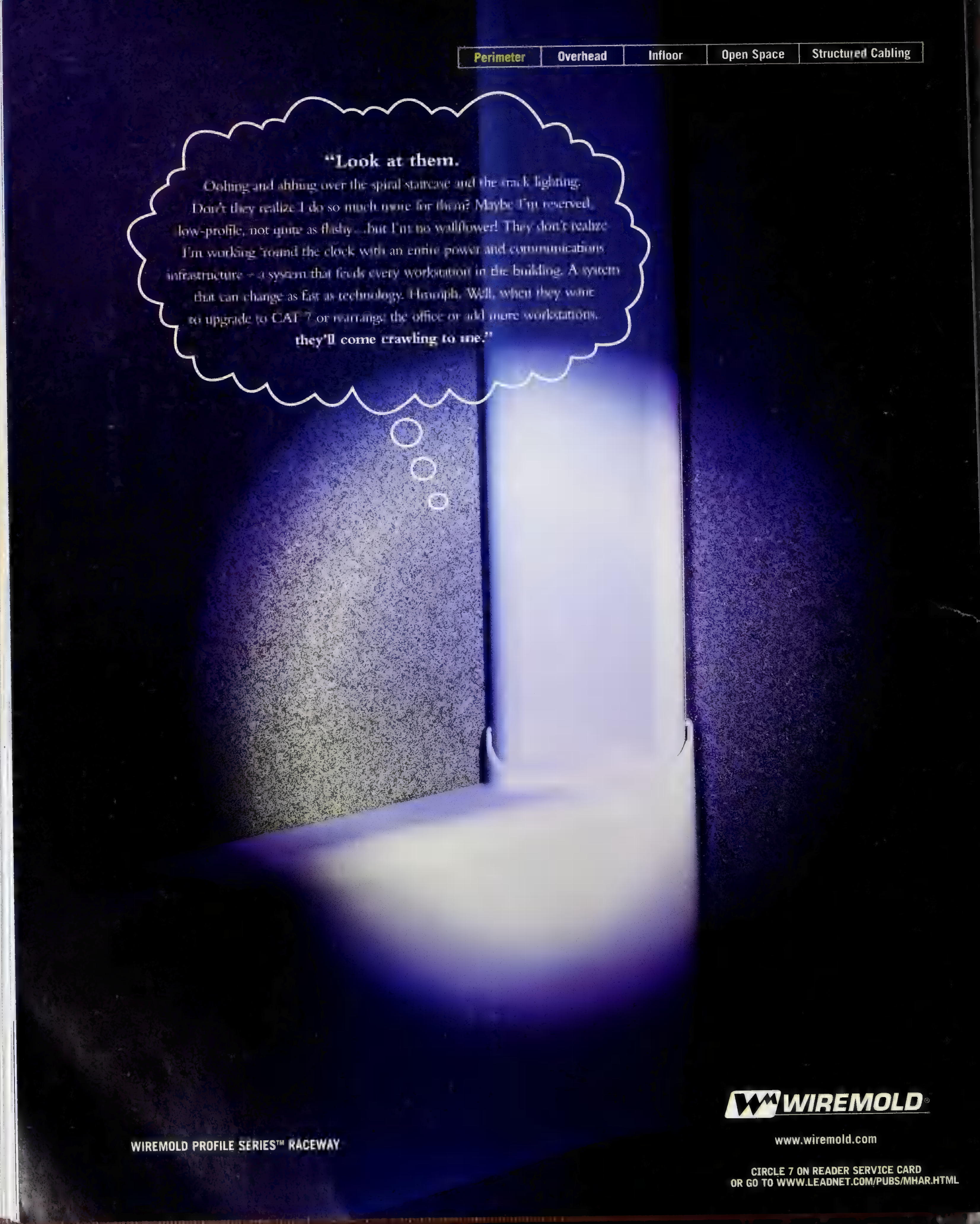

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03.2002

On the Cover: *Milwaukee Art Museum, by Calatrava Valls. Photograph by Alan Karchmer/ESTO.*
Right: *Kimmel Center, by Rafael Viñoly Architects. Photograph by Jeff Goldberg/ESTO.*

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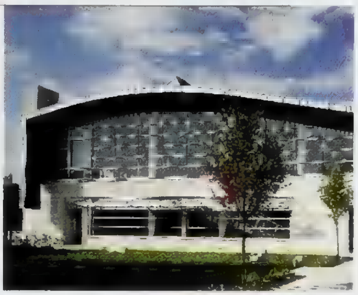
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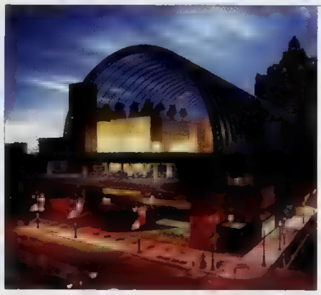
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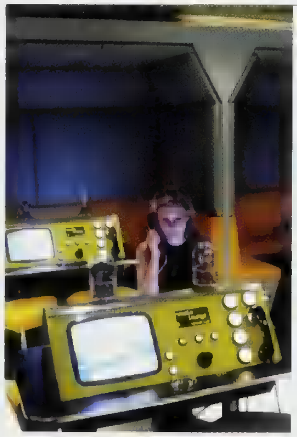
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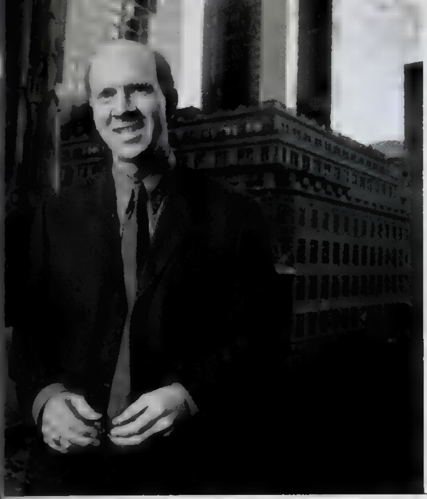

Street Smarts

Editorial

By Robert Ivy, FAIA

In the 20th century, urban observers like Jane Jacobs praised the interactive sensory and social experiences that lie on any good block in Greenwich Village or Back Bay Boston. They cited 19th-century precedent, admiring humanely scaled buildings with their wealth of detail and texture, overlaid with the modern era's democratically raucous street life. Discovering worthwhile contemporary examples of urban vitality, however, has often meant traveling outside the U.S. After a 13-hour flight to Japan, one can find age-old civic traditions mingling with tomorrow's, out on the open street.

The first, most obvious lesson—one already familiar to Western audiences—is apparent on any Japanese byway: Low-rise, high-density cities can make humane places to live. The civilized residential heart of Tokyo beats outside the governmental core, a hop away by commuter rail. There, unnamed roads conform with the topography, combining four stories of housing above the odors and colors of streetside shops: fishmonger, pharmacy, sweets, antiques, cheap clothing, hardware repair, flower vendor. From wall to wall, a constantly rolling tangle of baby strollers, conversation, and the errant auto converge in a quotidian version of street-heaven.

Conversely, in a city of 8 million people where not everyone can live downtown, transportation counts. Subways link the metropolitan area, interconnected to larger rail lines, buses, and planes, yet a daily commute may take 2½ tedious hours from the eastern suburbs. Despite a plethora of rail, including accurate-to-the-moment bullet trains and private lines, freeways can be jammed with Toyotas and Hondas, and at certain hours, the sidewalks seem impassable. Everyone wants to be near the gravitational core.

Unlike Western cities, which owe their rationally gridded roads to the Roman military camp, Japan's urban origins are more complex. In this multilayered country, mountain wilderness rolls down to space-age cities like Osaka or Tokyo, which, in their historic antecedents such as Kyoto, constantly unfolded inwardly, as wrapping became artful for objects and people (think of the kimono, with its under and outer garments). The late-20th-century reconstruction boom brought astonishing modernity and a stylistic polyglot to the entire country, with a certain grimy urban aspect. Much as John Portman envisioned in this country, layers translate into levels where land is scarce: In Osaka, skybridges connect tall structures; in Tokyo, shopping and dining regularly occur below grade. Despite the presence of a few well-visited parks and the Imperial Palace grounds, only a few large open spaces allow breathing room. The street represents Japan's contemporary face, the visible, animated component of the whole organism.

Jump downtown to the contemporary drag, where Sunday evening activity reaches fever pitch on the Ginza—blue and red and white signs vertically ablaze and all doors open. Despite Japan's current, larger economic doldrums, no slowdown in retail activity seems apparent. Stylish shoppers four abreast buzz through the Matsuya department store or the new Hermes emporium, its oversize glass-block facade designed by Renzo Piano. The brand matters, whether the brand is a famous architect or a silk scarf.

And what do you do on a street? Move. You walk, ride, pause, and then walk again, taking the measure of time and place in one meter increments, the width of the human stride. Outdoors in Tokyo or Milan or New York, we fully engage life, not passively but by moving and seeing, watching, gabbing on cell phones, eating, and occasionally buying. But to see this urban vitality as simply the visible heat and light of commerce misses part of the point.

What I saw in Tokyo has more to do with a kind of human unfolding for people whose lives are circumscribed by other physical and social layers. On the street, we put on a new set of garments, what the 17th century would have termed raiment—comprising an environment for mind and body that is broader, open to the sky, electrified with color and the hum of the present. In 21st-century Japan, as in 19th-century New York, we are drawn inevitably to the light, and it shines most clearly on the street. The old lessons about urban life still apply, translated and plugged into a new age.

Robert Ivy

International Village
Vancouver, British Columbia

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Letters

Palatable Postmodernism

Bob Campbell's February Critique on the virtues of Postmodernism [page 53] is brilliantly sane. Those who gloat over the supposed death of Postmodernism (or deny their involvement with it) are as misguided as those who danced on the grave of Modernism in the 1970s. Inclusiveness, yes!

—John Morris Dixon, FAIA
Old Greenwich, Conn.

Wake up

I would like to express my opinion regarding your December 2001 issue, which was in part dedicated to "decidedly edgy" young architects. With the exception of a couple of teams, all the projects were at the university level, and in my opinion, have little to do with harsh architectural reality.

Your selection of the published projects could mislead young architects who dream of starting their own firms. Architecture is not about drawing pretty pictures, unless you are still in school. All those nice buildings that Richard Meier designed are not there because he is a genius architect, but mostly because he is a genius politician and has found a way to make his peers and the general public happy.

Please be a little more real and give credit to the young architects who are out here trying to become involved in public life, attending City Council meetings, and trying to keep change orders under .3 percent. We are the ones who are pushing the real envelope, and taking the risk of losing real customers, even as we present them with projects that are beyond their conventional suburban thinking.

—Alex Protasevich, Assoc. AIA
Salt Lake City

Each month in archrecord2, both on the Web at architecturalrecord.com and in the magazine, we present the work of young architects such as yourself, including a forum for discussion, career, and lifestyle issues. The Editors

Family values

In the January issue of RECORD [News, page 24], you quoted an officer of *The New York Times* as saying, "This building is designed from the ground up to reinforce the values of The New York Times Company."

Does this mean it will lean to the left?

—David Ganly
New York City

Looking back at a hero

I just read the January 2002 editorial about Sambo Mockbee [page 15], and I was very much encouraged and challenged by what you had to say. It seems that Sam looked at the world—at those around him—with a kind of humility that recognized no class, race, or creed. He truly sought to serve others through his talents. He could provide shelter and make it beautiful. He made strides toward redeeming our culture through the work of his hands. The editorial put it so well, contrasting the way most of us deal with poverty to the way Mockbee did: "Consistently, unapologetically, Sambo raised the curtain and went inside." We all should—not forcefully, as if we have "the answers," but lovingly. Interesting to think about the work he left behind; not buildings that point back to him as a great architect, but very lives that were changed by what was given to them!

Thanks for presenting his life and passion to us through this forum; this may have been the most important editorial you will ever have the opportunity to write. I hope we all take heed—first of all myself.

—Brian Barrett
The Garrison Barrett Group
Birmingham, Ala.

Reuse, renew, recycle

We were coarchitects with Hans Hollein for the proposed Harvard Square building that was defeated last spring [November 2001, "Preservation's Shackles," page 91]. Although historic preservation and adaptive reuse are an important part our firm's work, we believe that new design should be encouraged to go in new directions. This means there may often be some ruffled feathers, even some mistakes, but a review process that merely prevents what it considers to be bad design rather than encouraging imagination is a mistake in itself. It leads to just the sort of corporate blandness that has taken over much of Cambridge.

Two blocks from our site is Benjamin Thompson's superb 1970 glass-and-concrete Design Research (now Crate & Barrel) building, similar in size and materials to ours. We wonder if it could have been built today. However, we are not entirely pessimistic about public acceptance of imaginative design in our city, for it should be pointed out that three out of four Cambridge public reviews approved the design we submitted.

—Leland D. Cott, FAIA, principal
—Jonathan Hale, AIA, director of business development
Bruner/Cott & Associates
Cambridge, Mass.

Plastic passion

So, "Plastics Finally Get Respect" [December 2001, Building Science, page 107]. It's about time!

Architects like Peter Pfau offer outstanding examples of their use. However, despite the fact that performance, aesthetics, and versatility make translucent polycarbonates an exceptional choice for economical, energy-efficient daylighting, many architects have yet to invest the time and effort to learn about such alternatives. Hopefully, articles like this will spur investigation and evaluation by the AEC community.

—David M. Miller, AIA, president,
Duo-Gard Technologies
Canton, Mich.

Corrections

The photograph of the Bennington college dorms by Kyu Sung Woo (below) that appeared on the cover of the February 2002 issue should have been credited to Timothy Hursley. In that issue's story about the Gateway School [page 116], Andrew Bartle was the principal in charge. Also, the bottom picture on page 116 was reversed. In the January issue's story on the Allston Library [page 86], Richard Burck Associates was the landscape architect. In January's story on the Portland Airport [page 124], Kelly Davis, AIA, was project manager; John Thompson, AIA, was senior designer; and Bob Zimmerman, AIA, was project architect for Zimmer Gunsul Frasca. Also in that issue, in the Guggenheim Las Vegas story [page 100], the winding stainless-steel ramps were by Raymond Company and the cabinet work was by Commercial Cabinet Company.

Bennington College Dorms by Kyu Sung Woo. Photograph by Tim Hursley.

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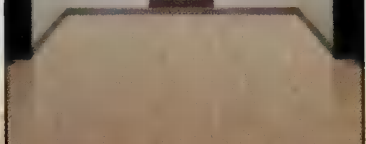

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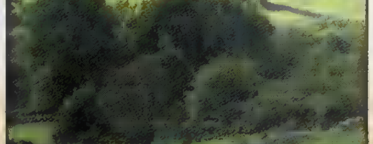

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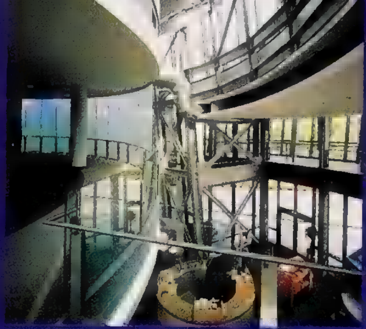

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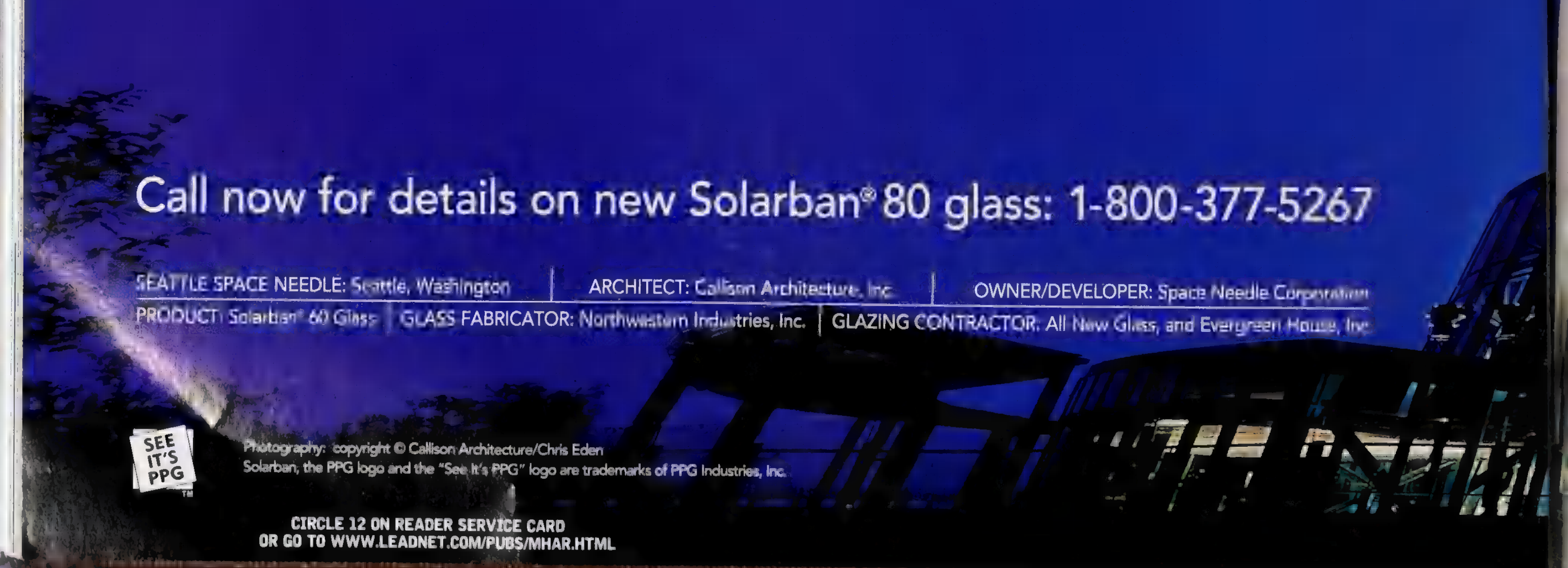

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Record News

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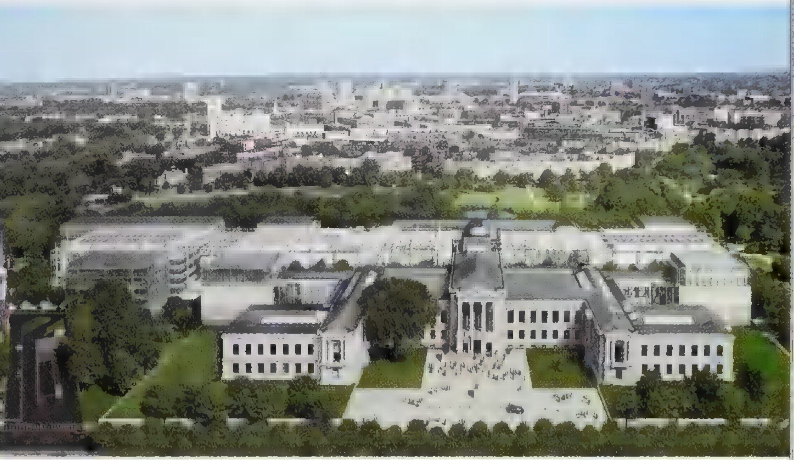
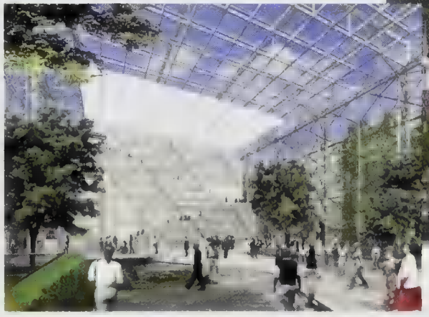
Lord Foster unveils Boston's Museum of Fine Arts expansion plan

The list of ambitious art museum construction projects in the United States continues to grow. In mid-February, the Museum of Fine Arts, Boston (MFA) unveiled plans by London's Lord Norman Foster for a multiphase expansion and renovation by his firm, Foster and Partners. The project will be part of the MFA's $425 million fund-raising campaign—the largest arts campaign in the U.S. outside of New York.

At least $180 million of the funds raised will go to construction. Plans call for a new glass-covered structure to be inserted within the length of the existing museum, which has a number of components, including the original 1907 building designed by Guy Lowell and a West Wing by I.M. Pei, completed in 1981.





The MFA expansion (above) will include a glass-covered structure inserted within the length of the existing museum and a "jewel box" (left).

Construction will begin in 2003, and by 2007 the first phase under the Foster plan, to include a new East Wing (seen farthest right in right photo) for art of the Americas and contemporary art, may be complete. Phase one will restore the symmetry of the original building design, with the south entrance connected to the reopened north entrance facing the Fens. A glass-covered, "jewel box" public space (left photo) will be inserted in the Fraser Garden Court.

Implementation of future phases, which would more than double the museum's square footage and include underground parking, will take about 15 years to complete and will depend on the success of fund-raising efforts.
John E. Czarnecki, Assoc. AIA

Drastic alteration underway for Meier's Bronx Developmental Center

The renovated building will have white metal panels.

Alterations have begun that will leave almost unrecognizable the Bronx Developmental Center, one of the key works in the career of Richard Meier, FAIA. Completed in 1977 as a treatment center for the mentally retarded, the center was sold last year by New York State for $3.7 million to the Simone Development Companies, which is converting the structure to offices.

The *AIA Guide to New York City*, called it "a consummate work of architecture … sure to be ranked among the great buildings of its time." On a recent visit, the power of Meier's crisp geometries appeared undiminished. But builders have already started removing the airplane-fuselage-colored aluminum panels with their signature porthole-like windows to make way for white metal panels with rectangular windows. Meier's windows could not economically be saved, explained Mitchell D. Newman, AIA, president of Newman Design Group, the firm that has designed the renovation.

Interiors have already been gutted, but plans include the retention and restoration of a large landscaped courtyard and the glassy bridges that cross it. Simone will add 120,000 square feet to the building's existing 330,000 square feet, and three planned structures could enlarge the complex to a total of 1.2 million square feet.

Meier's aluminum facade included rounded windows.

The state did not attempt to put any conservation strings on the sale, and the building is too young to be eligible for local or national landmark status. "It slipped by everyone's radar screen," said Theo Prudon, who is president of DOCOMOMO U.S., a national organization dedicated to preserving modern buildings. Simone did not consider hiring Meier, nor did Newman consult his office. Meier said he was "shocked," having heard nothing about the alteration prior to a February 1 *New York Times* report.

The Bronx Developmental Center has posed special problems, however, because both its imagery and functionality were questioned from the day it opened, especially by mental heath advocates.
James S. Russell, AIA

COURTESY SIMONE DEVELOPMENT (MIDDLE RIGHT)

OFF THE RECORD

After a 16-month work stoppage, construction is set to resume on the San Diego Padres ballpark designed by Antoine Predock, FAIA. Struggles over financing came to an end when Merrill Lynch bought $169 million in bonds to finance the ballpark, which will likely open in 2004.

Toshiko Mori has been appointed chair of the department of architecture at the Harvard University Graduate School of Design. She succeeds Jorge Silvetti in that position.

Steven Ehrlich Architects has been selected to renovate the historic Culver Theater in Culver City, California, now called the Kirk Douglas Theatre.

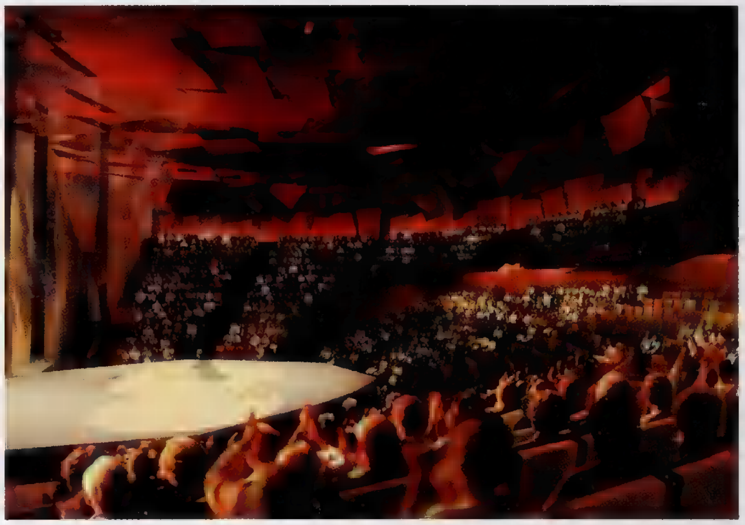
Field Operations has developed a competition-winning plan to transform Fresh Kills, a 2,200-acre landfill on Staten Island, New York. Others competing were Hargreaves Associates, Tom Leader Studio, John McAslan + Partners, RIOS Associates, and Sasaki Associates.

Ann Casso has been appointed executive director of the AIA Trust, which develops insurance and financial benefit programs for AIA members. Casso succeeds Ann Marie Boyden, Hon. AIA, CAE, who is retiring after 13 years as the AIA Trust's first executive director.

Construction will begin this year on a $20 million expansion of the 26-year-old Maryland Science Center in Baltimore's Inner Harbor. Design Collective of Baltimore will design the 42,000-square-foot addition.

The AIA/UK chapter has given its 2002 Excellence in Design Awards to Patel Taylor Architects for Thames Barrier Park, Richard Rogers Partnership for 88 Wood Street in London, Wilkinson Eyre Architects for Gateshead Millennium Bridge, and Zaha Hadid Architects for Terminus and Car Park in Hoenheim North, Strasbourg, France.

Nouvel inspired by site for Guthrie



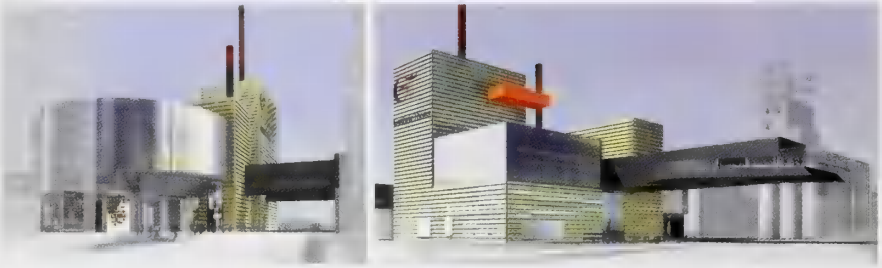
"I was strongly influenced by this site," French architect Jean Nouvel said as he unveiled his design in February for the $125 million Guthrie Theater in downtown Minneapolis near the Mississippi River. "I like to work with identity … the specificity of a site. And I knew that I had found that here."

For what will be his first building in the United States, Nouvel, who is clearly captivated by the river, designed a three-stage, 225,000-square-foot building with a stylized industrial aesthetic that references neighboring historic buildings. The most notable feature of the design is a 140-foot-long cantilevered "endless bridge" that slices through the main theater lobby at the second level and extends to the river's edge. On the third level, a smaller lobby with walls of floor-to-ceiling orange glass will also cantilever off the building for unobstructed, albeit tinted, views up and down the river. Exterior building materials include transparent silver metallic banding and a combination of clear glass and metal panel louvers in a pale yellow color intended to mimic the weathered limestone of neighboring buildings.

Nouvel has designed a 1,100-seat theater with a thrust stage (above) that has an asymmetrical seating arrangement similar to the one in the existing Guthrie Theater. The complex will also include a 700-seat theater and a flexible 250-seat black-box theater for experimental works.

Scenery and costume shops will be on top of a 600-car parking ramp across the street. Two fully enclosed skywalks will link the theaters to the shops.

If funding is procured, groundbreaking is scheduled for fall, with a 2005 opening. Currently in the midst of a $75 million capital campaign, the Guthrie has asked the state for $35 million. Minnesota governor Jesse Ventura opposes the expenditure. *Bob Dillon*



With building forms and metal cladding, Jean Nouvel invokes imagery of the industrial past in his design for the Guthrie Theater on the Mississippi River in Minneapolis.

AIA scholarship support rescinded, then abruptly reinstated

As the e-mail newsletter *ArchVoices* reported, the American Institute of Architects (AIA) announced in mid-January the suspension of AIA/AAF scholarships for first professional degree candidates for 2002–2003. Citing diminished returns on the AIA scholarship endowment funds in the slowed economy, Norman Koonce, FAIA, EVP/CEO of the AIA, wrote in a January 16 letter to all architecture schools in the United States: "I know many of your students may have already begun working on the scholarship application, but I must ask your help in immediately suspending the process. The American Institute of Architects is not in a position to make scholarship awards … for 2002."

Following concern from educators, practitioners, and AIA components, Koonce subsequently sent a letter on February 4 to the schools that stated: "Please encourage those architecture students from your school who had planned to apply for an AIA/AAF scholarship as a First Professional Degree Candidate to resume their application process … We will diligently pursue creative approaches for continued funding of these 2002 scholarships." The application deadline was extended two weeks, to February 22.

In 2001–2002, $330,000 in financial support was administered to 243 students through the Scholarship for First Professional Degree Candidates. The total to be granted for 2002–2003 was not known to us at press time. *JEC*

PHOTOGRAPHY: © COURTESY JEAN NOUVEL

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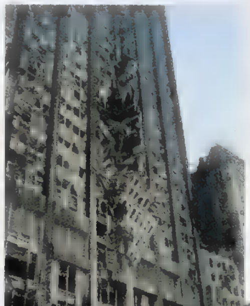
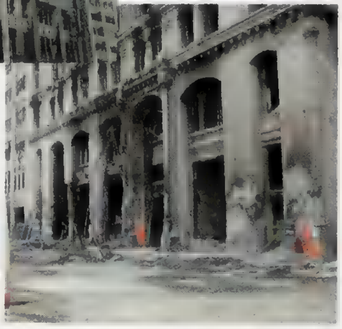
SPECIAL REPORT

Heavily damaged buildings surrounding Ground Zero require extensive renovations

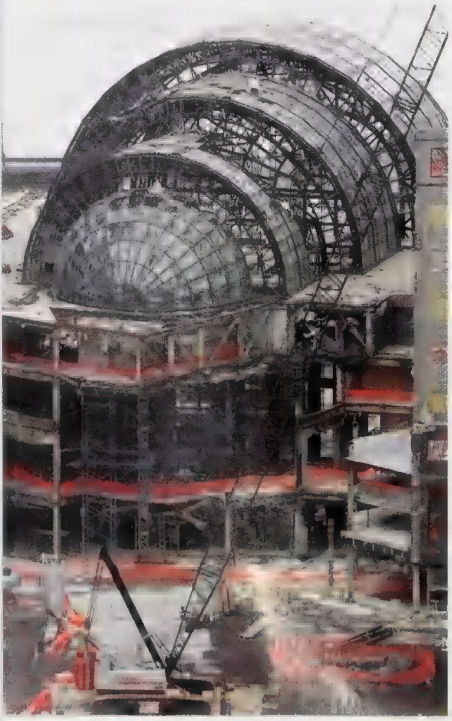




Repairs to 130 Liberty Street (left, pictured soon after the attack) will take at least a year, but the fate of 90 West Street (below) is uncertain. The Winter Garden (bottom) reopens in September.

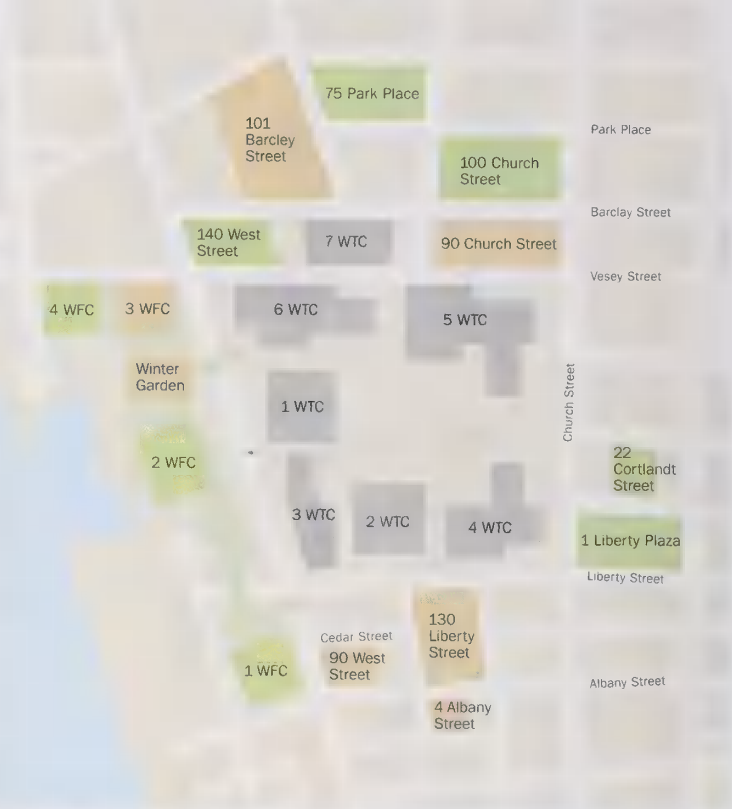
Efforts continue to renovate and reopen buildings surrounding the World Trade Center that suffered considerable damage in the September 11 attack.

The World Financial Center's Winter Garden (below), designed by Cesar Pelli, FAIA, and completed in 1988, is in the midst of a $50 million restoration that should be complete in time for the one-year anniversary of the September 11 disaster. In the attack, debris from the towers smashed through the Winter Garden's east facade and glass-covered roof. Replacing the Winter Garden's damaged marble alone will cost $3 million.



As of mid-January, the World Financial Center was about 25 percent occupied. The World Financial Center's towers 1, 2, and 4 have reopened. Just north of the Winter Garden, 3 World Financial Center sustained structural column damage on its southeast corner from falling debris. Portions of that building will reopen this spring, with American Express moving employees back into the building in April. The Marriott Financial Center at 85 West Street, used by the Red Cross for many weeks after September 11, reopened to the public in January.

Repairs to 130 Liberty Street (top), which had a debris-riddled gash from the ground to the 24th floor in its north facade, will likely take at least a year. The limestone and terracotta clad 90 West Street (above), a 23-story, 1907 Cass Gilbert building, sustained considerable fire and debris damage from the attack. The building's fate is uncertain—it may be demolished if renovation, estimated to cost $50–$100 million, is unfeasible or not fully covered by insurance. An Embassy Suites Hotel north of the World Financial Center reopens in April, and the Millennium Hilton on Church Street will likely open in September after cleanup and repairs. *JEC*



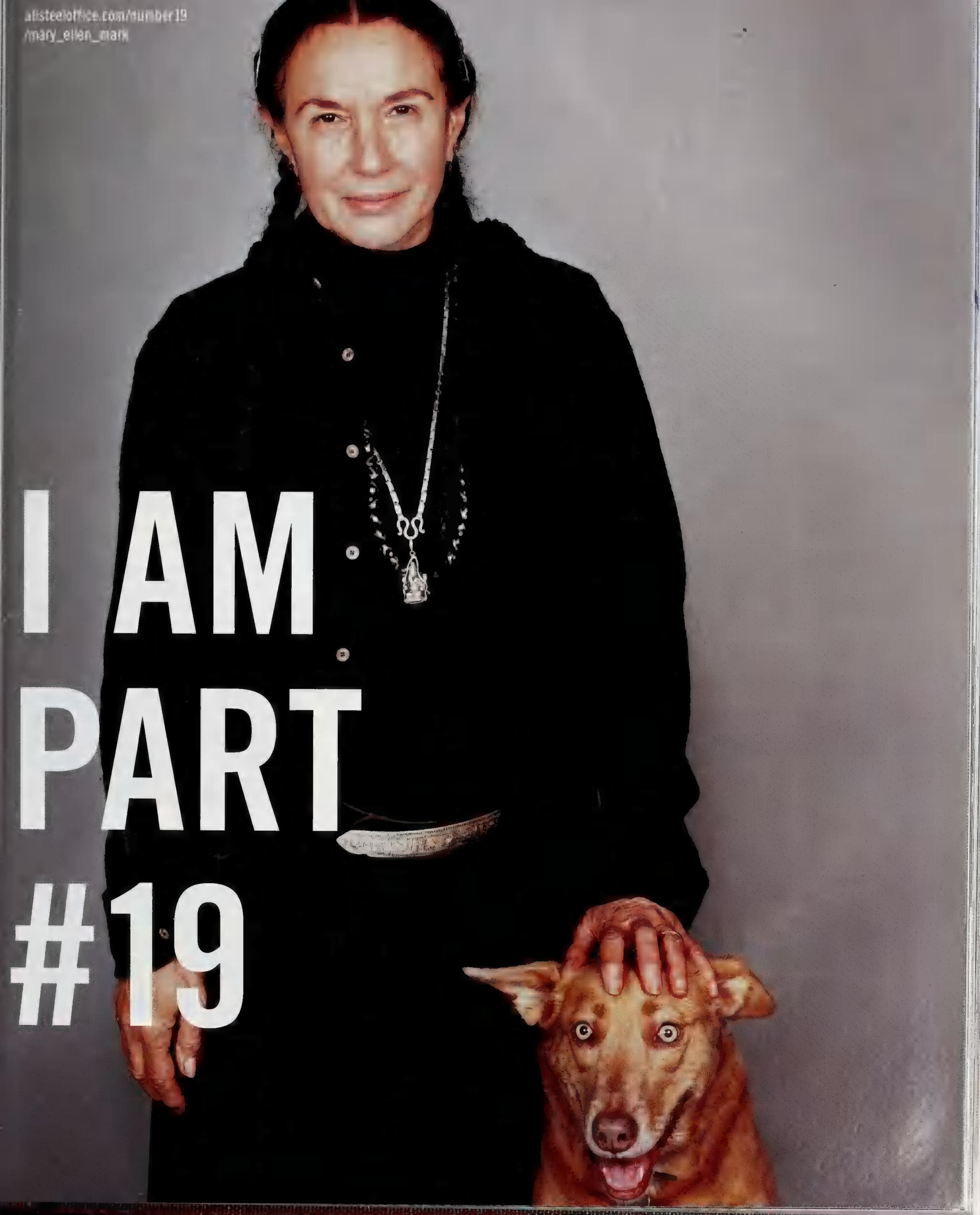
Assessing the damage done

The September 11 attack destroyed the World Trade Center, but about 45 buildings were also battered in the immediate area. Here is the status, as of late February, of the surrounding buildings that sustained the most damage. Buildings in green have reopened, and those in gray are gone.

BUILDING	SQ. FEET	STATUS
1 World Trade Center	4.76 million	Destroyed
2 World Trade Center	4.76 million	Destroyed
3 World Trade Center	n/a	Destroyed
4 World Trade Center	584,000	Destroyed
5 World Trade Center	784,000	Destroyed
6 World Trade Center	538,000	Destroyed
7 World Trade Center	2 million	Destroyed
1 World Financial Center	1.46 million	Reopened
2 World Financial Center	2.59 million	Reopened
3 World Financial Center	2.30 million	Reopening starting in April
4 World Financial Center	2.08 million	Reopened
90 West Street	335,000	Building survival uncertain
140 West Street	1.17 million	Partially open, rest by 2004
130 Liberty Street	1.42 million	Reopening at least 1 year away
4 Albany Street	131,000	Reopening 6–12 months
1 Liberty Plaza	2.12 million	Reopened in October
101 Barclay Street	1.23 million	Reopening this summer
90 Church Street	950,000	Reopening starting in June
100 Church Street	1.03 million	Reopened in January
22 Cortlandt Street	668,000	Reopened in February
75 Park Place	567,000	Reopened

Sources: Crain's New York Business, The New York Times, *building owners, LZA/Thornton-Tomasetti*

PHOTOGRAPHY: COURTESY PORT AUTHORITY NY/NJ (TOP TWO); © AP PHOTO/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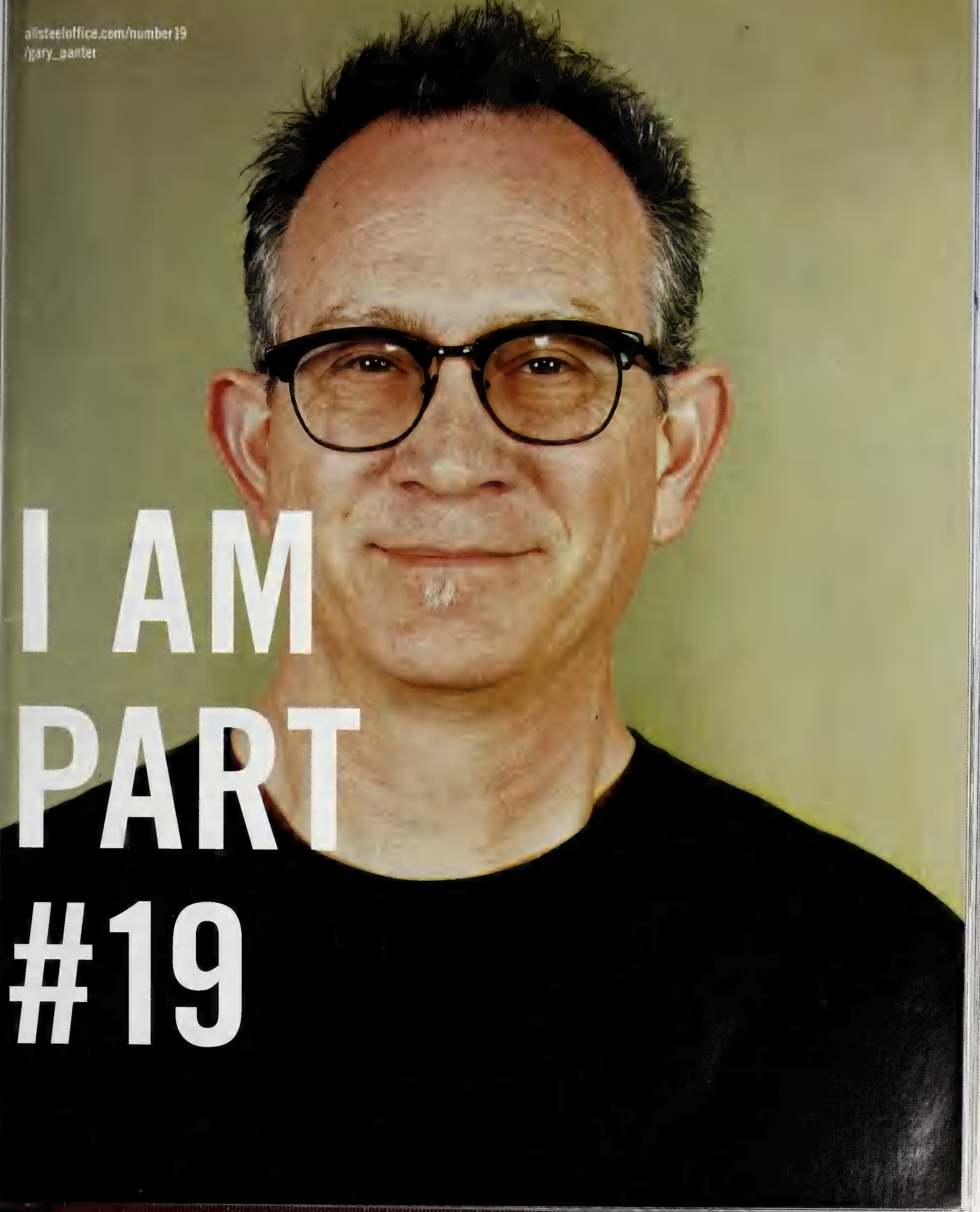
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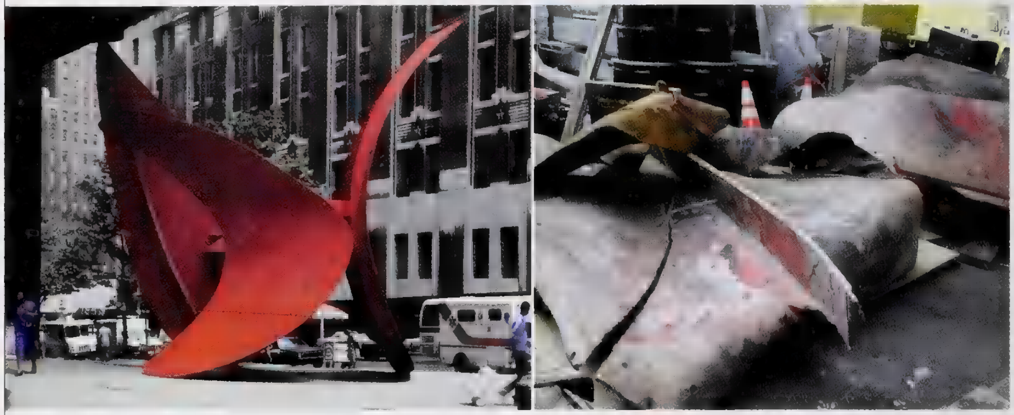
SPECIAL REPORT

Architects assemble and catalog WTC artifacts for history



Among the items saved are a mangled stabile by Alexander Calder (left, before; right, after).

During the months since the collapse of the World Trade Center, a small group of architects has been working to determine what to save. The process began two weeks after the disaster, when Robert Davidson, chief architect for the Port Authority, appointed Bart Voorsanger, FAIA, principal of Voorsanger & Associates Architects; Marilyn Jordan Taylor, FAIA, chair of Skidmore, Owings & Merrill; and Saul Wenegrat, former curator for the Port Authority, to the task of recommending which objects to salvage.

In the weeks following the destruction, Mark Wagner and Andrea Wiedemann, a Voorsanger architect and intern, respectively, began scouring the debris. They have assembled, photographed, and cataloged a collection of significant artifacts, from shards of a high-altitude television antenna that once graced the north tower to 40-ton remnants of steel curtain wall to signs that marked exits to buildings. The team also rescued two of seven major public art works that remain partly intact—a dented Calder stabile and the remnants of a Fritz Koenig spherical bronze sculpture.

By mid-October, the team was approached by a consortium of 40 cultural institutions—among them the New-York Historical Society and the Smithsonian Institution—that are beginning to think about how to commemorate the tragedy. The Museum of the City of New York, for example, expressed interest in preserving objects of social as well as architectural significance. In response, the team began collecting fragments that reflected daily life at the site, such as office furniture and coffee cups. Objects—some mangled, others chillingly undamaged—are being stored in scrapyards in New Jersey, at the Fresh Kills landfill, and in an unused airline hangar at Kennedy airport. Voorsanger, who has been working pro bono on this project, says, "We are intentionally not taking a position about what a memorial should be in order to preserve the widest possible array" of artifacts. *Tess Taylor*

A portion of the north tower antenna (below) and the Fritz Koenig spherical sculpture (bottom).

WWW For continuous updates on the aftermath of the September 11 attack, visit our special section at: ***architecturalrecord.com***

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Exhibited projects include the Utah Olympic Oval (top), by Gillies Stransky Brems Smith, and the Nike Headquarters in the Netherlands, by William McDonough.

Fit cities celebrated during Winter Olympics

"The Physical Fitness of Cities," a 2002 Cultural Olympiad exhibition in Salt Lake City emphasizes the interdependence of the built and natural environments. The exhibition celebrates innovative urban design and "excellence in human settlements, at a time when the Olympics turn our attention to excellence in athletics," said Salt Lake planning director Stephen Goldsmith, who served as project director for the exhibition and a related symposium held in the city.

Continuing through March 30 in the restored 107-year-old Salt Lake City and County Building, the exhibition highlights projects that, according to the program, "establish new standards of resourceful design, ethical practice, and far-reaching vision." San Francisco's Yerba Buena Gardens, the Nike European Headquarters in Hilversum, the Netherlands, and Staten Island's Eibs Pond Park Outdoor Classroom are among the projects chosen for the show because they are examples, says Goldsmith, of city builders working with nature.

Keynote speaker William McDonough, FAIA, began the three-day symposium, held February 1 to 3, in a tone that was both ominous and hopeful. Rather than reusing conventional designs, architects must take guidance from nature, he said. Quoting Einstein's statement that "no problem can be solved by the consciousness that created it," McDonough urged his audience to reinvent building and community designs, and spoke of his own firm's successes in persuading corporations to adopt healthful building practices.

Trust for Public Land director Will Rogers added to that message. "The chronic diseases of the 21st century—asthma, obesity, depression—can be moderated by how we design our human environment," Rogers said.

Author Terry Tempest Williams gave the symposium's final lecture. Williams spoke of an event—the 1983 flood of downtown Salt Lake City—that asserted nature's power to both threaten the community and knit its people together. Williams's new book, *Red: Passion and Patience in the Desert*, examines how the author's home state of Utah has been transformed by population growth, and expresses hope for further change, guided by a new consciousness of "nature as mentor," as Williams put it.

Other symposium speakers included Moshe Safdie, FAIA, Michael Sorkin, Michael Pyatok, FAIA, and Peter Calthorpe, FAIA. *Diane de la Paz*

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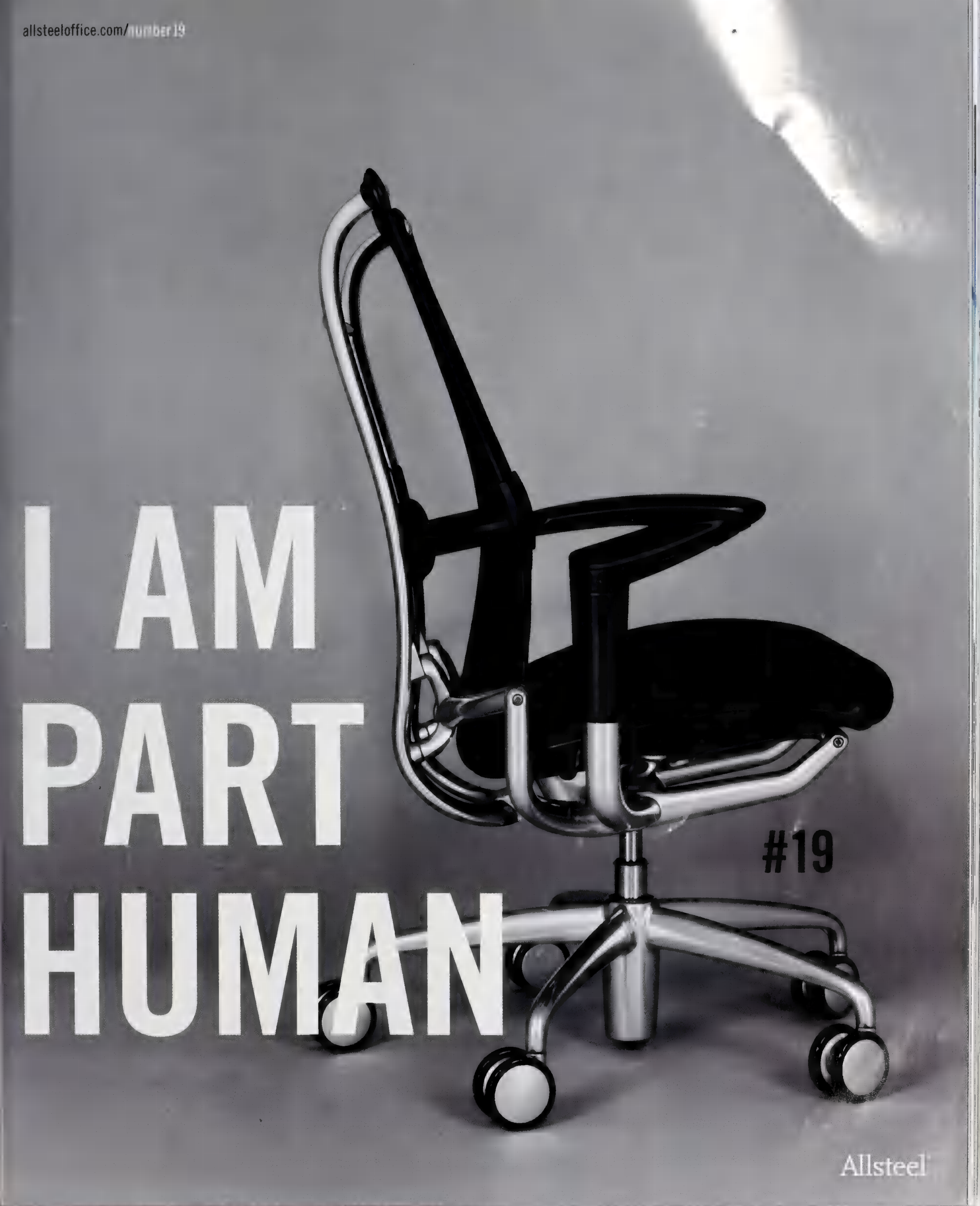
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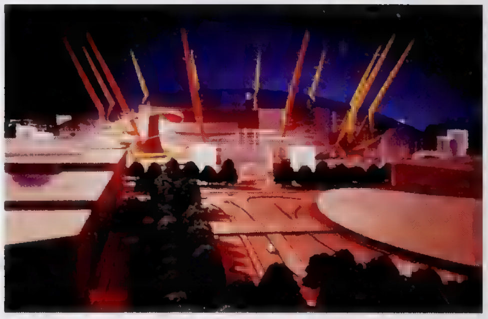
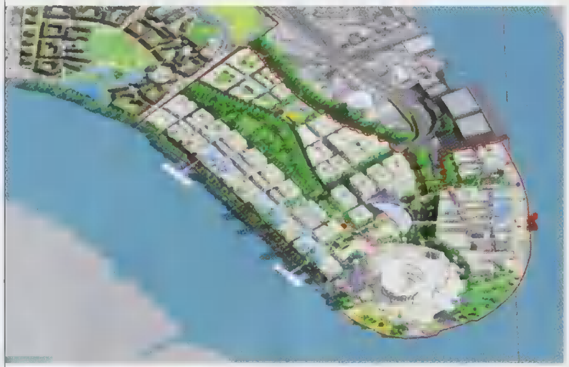
Millennium Dome and surrounding site to be redeveloped

Nearly two years since the competition to find a use for London's Millennium Dome was launched in March 2000, a solution is on the horizon. Instead of selling the notorious visitor attraction, which closed on December 31, 2000, the British government plans to lease it to multinational development consortium Meridian Delta. The government hopes to conclude a legally binding contract with Meridian Delta by the end of May, thereby bringing to an end an extremely embarrassing and protracted episode. If the deal goes through, the government will work in joint venture with Meridian Delta for 20 years, during which time the government will also take a portion of the profits, estimated at $800 million.

Meridian Delta plans to turn the Millennium Dome and the surrounding 190-acre site into a mixed-use commercial, residential, and leisure district, known as Dome Waterfront.



The Millennium Dome will be transformed into a 20,000-seat arena for sports and concerts.



The master plan by Terry Farrell includes 5,000 homes, and office and commercial space to support 20,000 jobs.

The Millennium Dome itself will be fitted-out as a 20,000-seat public arena, to a design by HOK Sport, opening in 2004. The cost of converting Richard Rogers Partnerships' iconic dome tent would be approximately $300 million. The area surrounding the dome will be developed with 5,000 homes, open space, and enough corporate and commercial space to support 20,000 jobs. Terry Farrell and Partners, which has been planning for the site for more than six months, has developed the master plan.

In total, Meridian Delta's plan will attract over $6.5 billion of investment to the former gasworks on the northern tip of the Greenwich Peninsula. The Meridian Delta consortium comprises U.S. giant Anschutz Entertainment Group, Lend Lease Europe, and Quintain Estates and Development. *Adam Mornement*

PHOTOGRAPHY: COURTESY MERIDIAN DELTA LIMITED

Whitney Young, Topaz, and Young Architects winners named

The American Institute of Architects (AIA) has announced winners in three award categories for 2002: AIA/ACSA Topaz Medallion, AIA Whitney M. Young, Jr., Award, and Young Architects Award.

Architect and educator Jerzy Soltan, a student of Le Corbusier through correspondence, was named recipient of the 2002 AIA/ACSA Topaz Medallion, which honors a person who has made an outstanding contribution to architectural education for at least 10 years and whose teaching has reached a broad range of students. Soltan retired in 1979 after 20 years at Harvard Graduate School of Design.

Robert P. Madison, FAIA, who has been a counselor, mentor, and advisor to minority students, was named winner of the 2002 AIA Whitney M. Young, Jr., Award. The award is named for the late civil rights and urban leader who, at the 1968 AIA convention, challenged architects to assume professional responsibility for social issues. Madison, the first African-American to graduate from an architecture school in Ohio, has been a leading architect in Cleveland since starting his firm in 1954.

Winners of the 2002 Young Architects Award are Randy G. Brown, AIA, of Omaha; Barbara Campagna, AIA, of New York City; Mohammed Lawal, AIA, of Minneapolis; and Joe Scott Sandlin, AIA, of Anchorage. The Young Architects Awards are conferred to those in an "early stage of their architectural careers who show exceptional leadership in design, education, and/or service to the profession." ***JEC***

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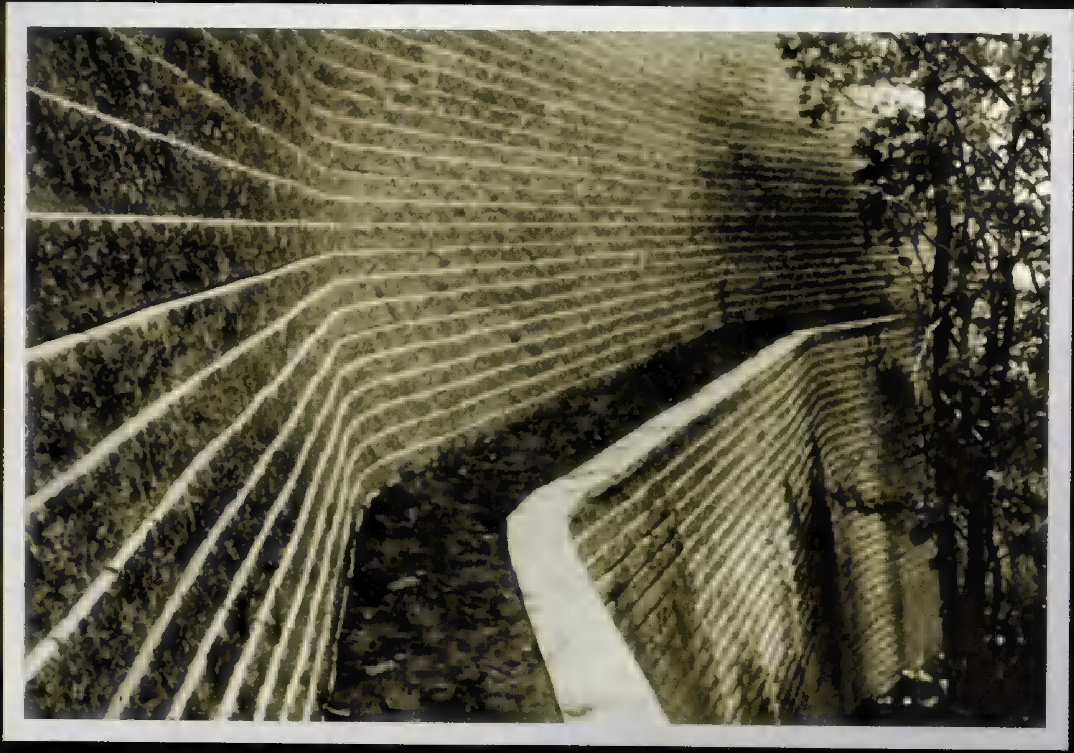

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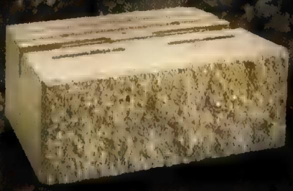

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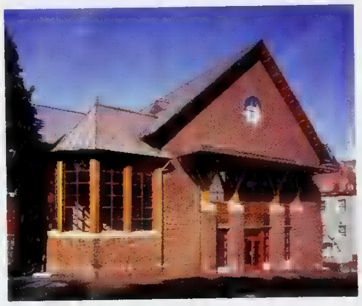
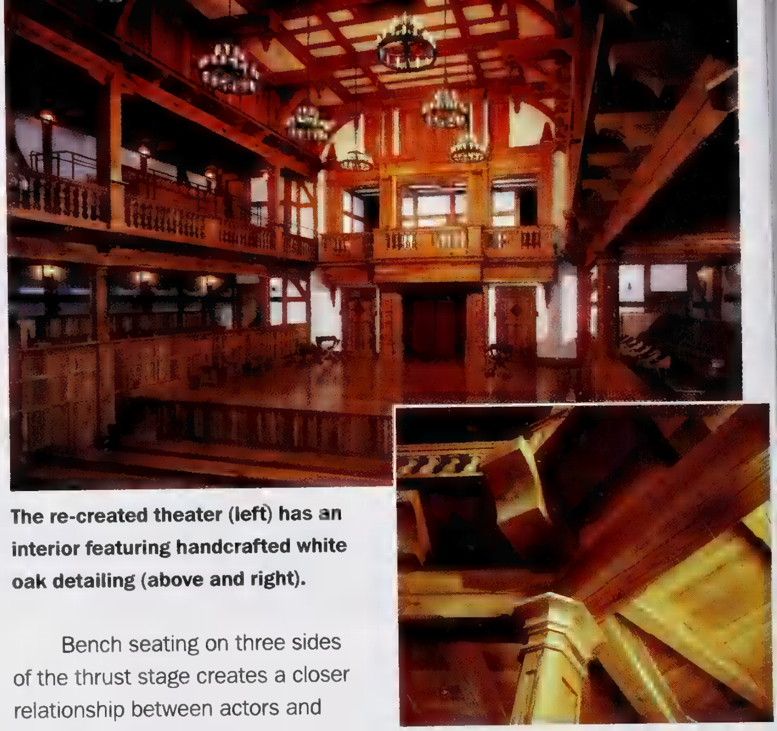
Blackfriars Playhouse re-created in Virginia

"We are not interested in creating 'ye olde Shakespeare,' but in recovering things that are primary to theater," says Ralph Cohen, director of the newly opened re-creation of London's Blackfriars Playhouse in Staunton, Virginia.

The original 1596 theater, the bard's favorite venue for staging his plays, stood on a bank of the Thames in London until it burned down in the city's Great Fire of 1666. Then, it was a new theater within an old refectory building; its facsimile in Staunton, a former industrial town in the Blue Ridge, recreates the 16th-century playhouse within a contemporary shell. The Virginia version is marked by a large gable, overhanging eaves, a glazed corner stair tower, and white oak detailing.



Because no pictorial evidence of the original Blackfriars interior survives, Richmond architect Tom McLaughlin, AIA, relied mainly on research by Elizabethan scholars. His 4,500-square-foot, $3.7 million structure seats 320. The framing is 12-by-14-foot white oak beams, the heaviest weighing 900 pounds, and 8-by-10-foot columns. Where possible, McLaughlin's team used traditional materials and methods: balusters and decorative elements hand-carved, and metal chandeliers and sconces handcrafted.



The re-created theater (left) has an interior featuring handcrafted white oak detailing (above and right).

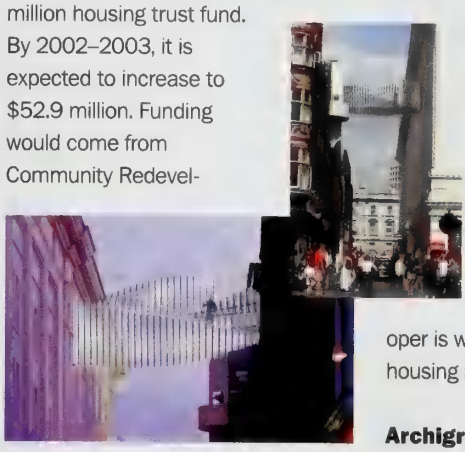
Bench seating on three sides of the thrust stage creates a closer relationship between actors and audience and among audience members than a proscenium arrangement would. The stage set is simple and fixed. Contemporary and period costumes provide color and indicate changes in venue and mood, and each actor plays several roles in a performance.

The Blackfriars' opening is the first step in establishing a national center for Renaissance drama performance in Staunton. Ground-breaking for a re-created Globe Theatre is slated for 2005. *Andrea Oppenheimer Dean*

News Briefs

Footbridge to dance over London Wilkinson Eyre Architects' footbridge for the Royal Ballet School in London recently won planning approval. The 26-foot link, 164 feet above Floral Street in Covent Garden, connects the ballet's new Upper School with the Royal Opera House. Glazed on all sides and sloping from 1 to 12 inches, the fourth-floor passage is supported by 23 square, parallel portal frames. Each frame is rotated roughly 4 degrees, to achieve a full 90-degree twist from end to end, giving it a "dancelike sense of movement," says James Eyre, RIBA, the firm's principal. Transparent and opaque glazing is attached to each 10-foot-tall aluminum frame to create the snaking effect. The $716,100 bridge, to be completed this summer, is the result of a design competition that Wilkinson Eyre won against Jeremy Dixon.Edward Jones. *Tony Illia*

$100 million for L.A. housing Los Angeles Mayor James K. Hahn has proposed a $100 million trust fund to build affordable housing in that city. The plan, if approved by the Los Angeles City Council, would increase the city's investment in housing to become the largest of any U.S. city by fiscal year 2003–2004. Los Angeles currently has a $10 million housing trust fund. By 2002–2003, it is expected to increase to $52.9 million. Funding would come from Community Redevelopment Agency funds, hotel taxes, federal community development block grants, and an increase in city business taxes.



Wilkinson Eyre's London footbridge.

SHoP's DUMBO building moves forward Light Bridges, a mixed-use condominium complex by SHoP/Sharples Holden Pasquarelli planned for Brooklyn's DUMBO neighborhood, has been approved by the City of New York. The building, SHoP's largest project to date, will include four floors of commercial space with 20 floors of residential condominiums. The building's exterior curves respond to zoning restrictions and available light and views. A construction date is uncertain, as the developer is waiting for the New York housing market to strengthen.

SHoP's condo development in Brooklyn.

Archigram wins RIBA Gold The British experimental architectural collective known as Archigram, rooted in 1960s counterculture, has won the 2002 Royal Gold Medal by the Royal Institute of British Architects (RIBA). The Royal Gold Medal is the RIBA's most prestigious architectural prize. Although Archigram disbanded in the 1970s, the group's influence over a generation of British architects is still apparent today. Archigram, led by Peter Cook, Warren Chalk, Dennis Crompton, David Greene, Ron Herron, and Mike Webb, was formed in the early 1960s by a group of British architecture school graduates who endeavored to push the boundaries of design and question the prevailing pedagogies of London architectural practice.

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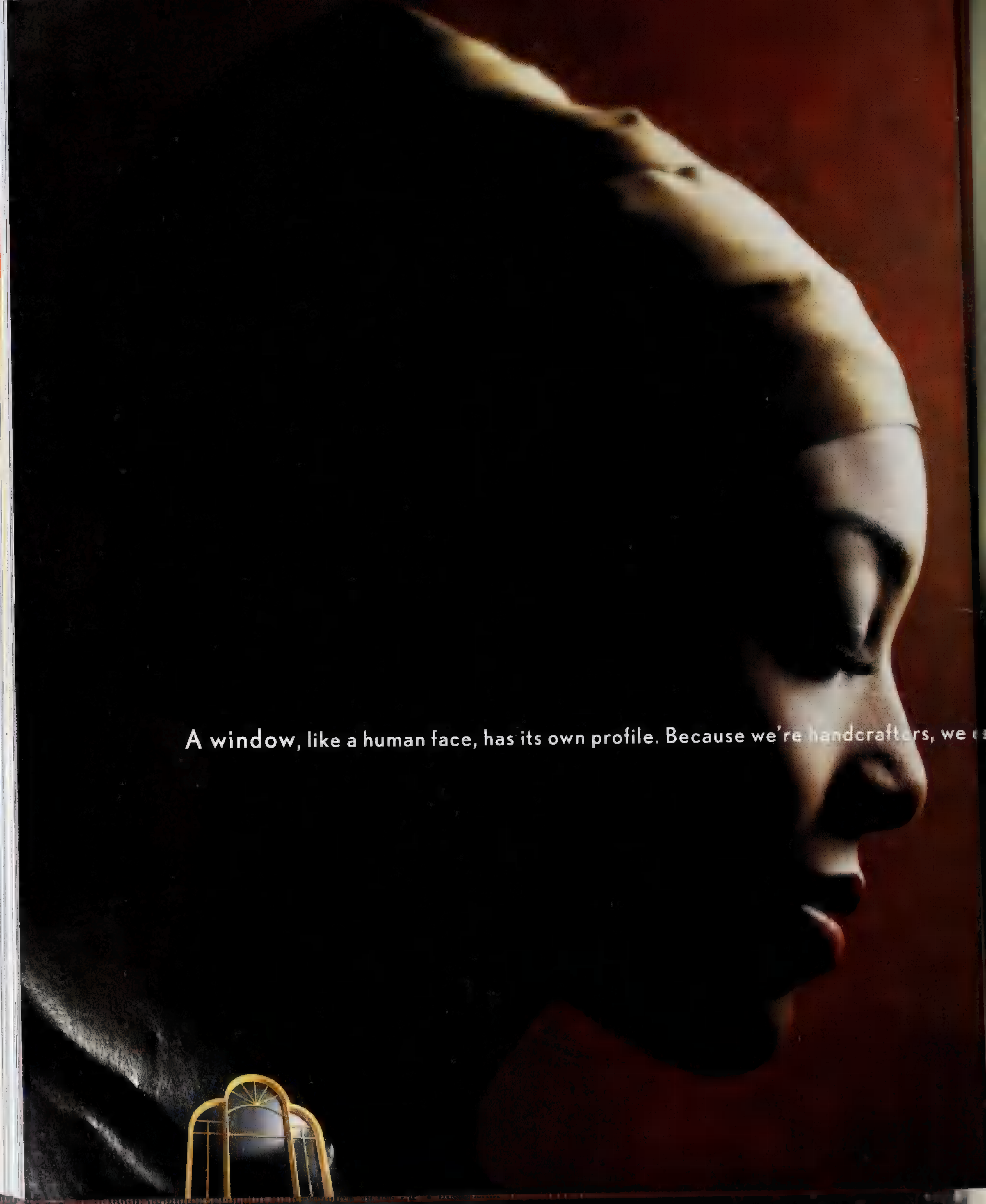
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Dates & Events

New & Upcoming Exhibitions

The Way of the Tea
New York City
March 6–May 9, 2002
In this exhibition, architects, designers, and artists explore the enduring influence of the tea ceremony upon contemporary art, architecture, and industrial design throughout Asia. Featured designers include architect Masayuki Kurokawa, graphic designer Kan Akita, and interior designer Takashi Sugimoto. At the Japan Society. For more information, contact 212/832-1155.

Ten Shades Of Green
Houston
March 22–April 21, 2002
Ten Shades of Green seeks to illuminate the different environmental issues involved in architecture and design. The ten shades refers to ten projects that have been selected as remarkable examples of sustainability. Among them are Foster & Partners' Commerzbank and Renzo Piano's Beyeler Foundation Museum. Sponsored by the Architectural League. At the University of Houston. Contact 212/753-1722.

The Alliance of Art and Industry: Toledo Designs for a Modern America
Toledo
March 24–June 16, 2002
In the 1930s, Toledo was a hotbed for cutting-edge industrial design. Now, almost a century later, it is celebrating its past with this exhibition at the Toledo Museum of Art. Among the 180 products included are cars, scooters, appliances, furniture, gadgets, and even a life-size model of the wildly modern "Kitchen of Tomorrow," presented in 1942. For more information, call 800/644-6862.

Alsop at the Soane
London
March 28–October 8, 2002
Celebrating the process behind the practice, this exhibition is the third in a series linking the work of celebrated contemporary world architects with the tenets and themes of the Sir John Soane's Museum and its unique collection of architectural ephemera, sculpture, and painting. The show includes models, film projections, and a selection from concept sketchbooks. At the Sir John Soane's Museum. Contact William Palin at will.palin.soane3@ukgateway.net.

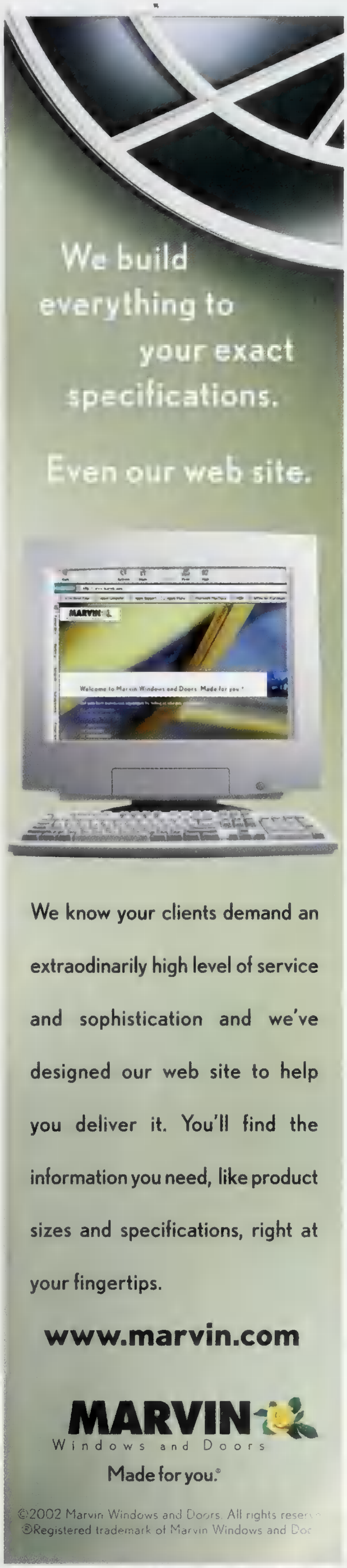
Ongoing Exhibitions

Aluminum by Design: Jewelry to Jets
New York City
Through April 7, 2002
Exploring how aluminum has inspired innovation in design, this exhibition includes works by René Lalique, Jean Prouve, Mies van der Rohe, Russell Wright, Charles and Ray Eames, and Gio Ponti. At the Cooper-Hewitt National Design Museum. Contact 212/849-8400 or visit www.si.edu/ndm.

Renewing, Rebuilding, Remembering
New York City
Through April 12, 2002
A photographic exhibition investigating cities that have been rebuilt in the wake of man-made and natural disasters. Photographs, renderings. and models will illustrate a diverse response to traumatic events and their dynamic impact on urban life. Among the cities on display are Berlin, Lebanon, Oklahoma City, and Manchester, England. At the Van Alen Institute. Contact 212/924-7000.

Museums for a New Millennium
Fort Worth
Through April 14, 2002
Finally making its United States debut, this international traveling exhibition presents the architectural designs of 25 world-renowned museums through drawings, photographs, and original models. Featured projects include works by Norman Foster, Zaha Hadid, Daniel Libeskind, and Santiago Calatrava. At the Modern Art Museum of Fort Worth. Contact 817/335-9215.

Isamu Noguchi: Sculptural Design
Weil am Rhein, Germany
Through April 21, 2002
Bridging the gap between fine and applied arts, this exhibition features the astounding artistic versatility of sculptor Isamu Noguchi, whose work extends well into the fields of architecture and design. On view are more than 80 projects—sculptural works, furniture, stage sets, and public design. At the Vitra Design Museum. Contact 011 49 7621 702 3351.



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Dates & Events

Cesar Pelli: Connections
Washington, D.C.
Through April 28, 2002
One of the most comprehensive retrospectives on the life and work of distinguished architect and AIA Gold Medalist Cesar Pelli. Through photographs, photo murals, more than 100 drawings, and 30 originals models, the show will explore over a half century of his career, culminating with his most recent work. At the National Building Museum. Contact 202/272-2448 for more information.

Architecture Flirts With Art: UN Studio/Matrix 146
Through April 28, 2002
One of the first museum exhibitions devoted to the innovative architectural designs of the Amsterdam-based UN Studio. The show's blend of digital and physical representation will feature some of the firm's most notable work, including the Erasmus Bridge and Mobius House, in a fashion that mirrors the firm's imaginative approach to digital technology and architectural design. At the Wadsworth Atheneum Museum of Art. Contact 860/278-2670 for more information.

Mathematica
San Francisco
Through May 5, 2002
This Eames-designed exhibition from 1961 showcases mathematics as both a science and a tool for art. Forty years later, it remains the only Eames exhibition still in existence. Other Eames designs on display include toys, home electronics, and lesser-known furniture. At the Exploratorium. Contact 415/563-7337 or visit www.exploratorium.edu.

WTC: Monument
New York City
Through May 5, 2002
As a tribute to the Twin Towers, this exhibition provides an in-depth exploration of the buildings' conception, design, and construction, beginning in the 1960s. It includes a 7-foot-tall architectural model of the towers by WTC architect Minoru Yamasaki, and a film commissioned by the Port Authority. At The Skyscraper Museum. Contact 212/968-1916 for more information.

Mood River
Columbus, Ohio
Through May 26, 2002
Explore the forms, materials, and textures of contemporary design through a close look at the objects and icons that define our everyday reality. This exhibition features more than a thousand products and designs from the worlds of fashion, sports, and technology, representing such designers as Philippe Starck, Frank Gehry, and Issey Miyake. The show is accompanied by a series of lectures, discussions, and walking tours. At the Wexner Center. Contact 614/292-3535.

Mies in America
Chicago
Through May 26, 2002
Exhibits work from the late career of the German architect Ludwig Mies van der Rohe, after he arrived in America in 1938. The Seagram Building in New York and the Farnsworth House in Illinois are among the show's highlights. At the Chicago Museum of Contemporary Art. Contact 312/280-2660.

US Design, 1975–2000
Denver
Through May 26, 2002
Through a choice selection of drawings and designs, this exhibition celebrates the work of American designers in the last quarter of the 20th century. Included in the showcase are such designers as Robert Venturi, Maya Lin, and Steven Holl, extending to architecture, industrial design, and beyond. At the Denver Art Museum. Contact 720/865-5000 for more information.

Lectures, Symposia & Conferences

Bricks and Clicks: Challenges in the Digital Age—Annual NASCUP Conference
New York City
March 13–15, 2002
Sponsored by the Society of College and University Planning, more than 250 campus administrators, planners, and architects are invited to discuss the relationship between teaching, education facilities, and technology. At Columbia University Lerner Student Center. For more information visit www.ccsu.edu/planning/nascup.

Havana: 500 Years of Architecture
Washington, D.C.
March 19, 2002
Architects Julio Cesar and Loeb Fellow at the Harvard Graduate School of Design survey more than five centuries of Cuban architectural heritage and history in a lecture that addresses the social and political impact of architecture. At the National Building Museum. Contact 202/272-2448 for more information.

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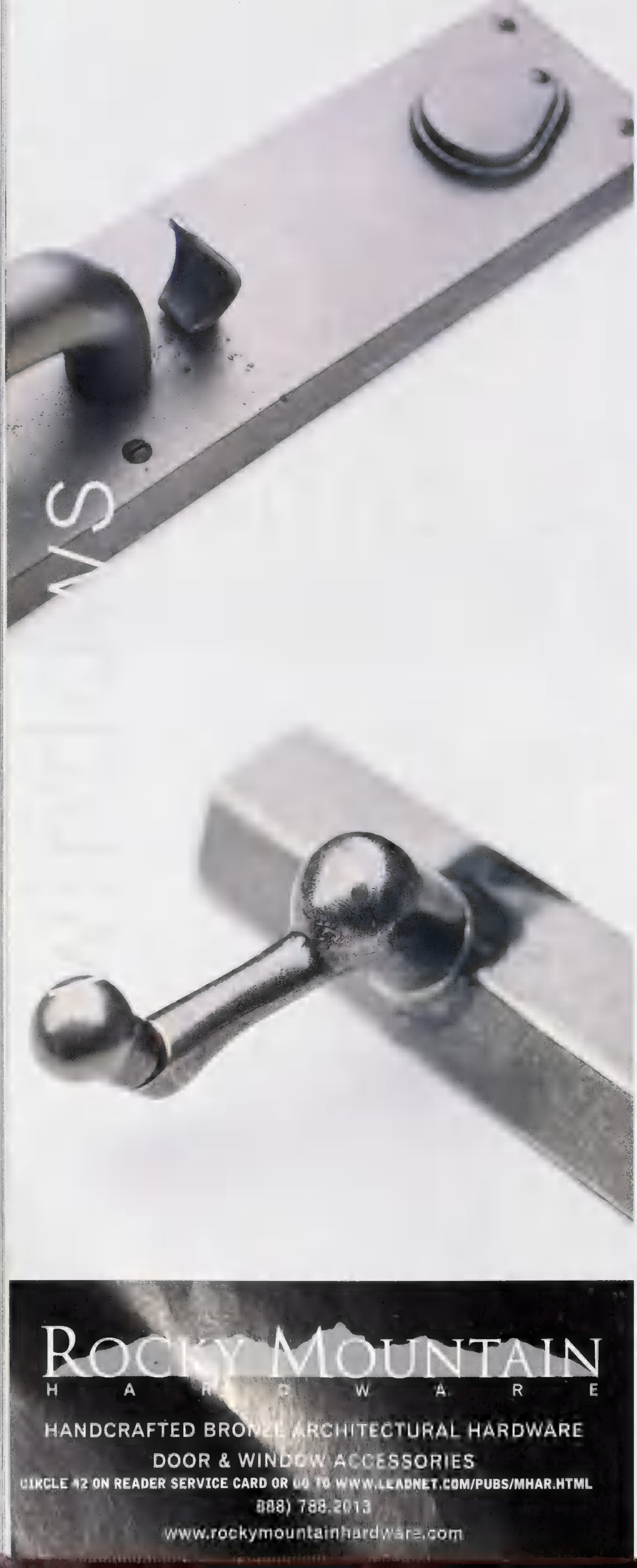

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Dates & Events

"Velocity" Design Conference
Richmond
March 22–23, 2002
The Virginia Society of the AIA presents its fifth biennial Virginia Design Forum. Speakers include Neil Denari, former director of SCI-Arc, Tod Williams, Ben van Berkel, William Morrish, and Adam Yarinsky. Register online at the Virginia AIA Web site, www.aiava.org, or contact 804/644-3041.

National Green Building Conference
Seattle
March 24–26, 2002
Targeting the mainstream residential building industry, this national conference focuses on cutting-edge green building technologies within the area of sustainable design. The opening session will be led by Ray Anderson, C.E.O of Interface—one of the worlds largest carpet manufacturers. At the Westin Seattle. Visit www.nahbrc.org for more information.

Computing and the Craft of Architecture
New York City
April 4, 2002
Jame Glymph, a principal at Gehry Partners, will discuss how industrial technology influences design. He will also discuss the unique applications of computer technologies, together with the value of collaboration between architect, engineer, and craftsman. At the Architectural League of New York. Contact 212/753-1722.

Ethics in Architecture Conference
New York City
April 6, 2002
The Congregation of St. Saviour at the Cathedral of St. John the Divine and the New York Chapter of the AIA host their third annual conference regarding issues in ethics and practice. This year's conference includes topics such as "Rebuilding after 9/11" and "Sustainability." Organized and moderated by architectural writers Mary Zaboglio Donovan and Elizabeth Kubany. Speakers include Jean Gardner, Frank Harmon, and Stanley Tigerman. Contact 212/740-4867 for more information.

International Quingue Symposium
Newport, R.I.
June 27–30, 2002
This four-day symposium brings together architects, artisans, and scholars to examine key issues in historic preservation practices and will feature the ongoing work of local preservationists and institutions. At the Salve Regina University. Contact 401/341-2156 for more information.

Conventions

Building Energy 2002
Medford, Mass.
March 20–23, 2002
A timely conference and trade show offering insight into the latest solutions for renewable and high-performance energy-efficient buildings. Over 100 experts will attend, to lead seminars, lectures, and workshops. Sponsored by Tufts University. Contact Northeast Sustainable Energy Association (NESEA) at 413/774-6051.

Restoration & Renovation 2002
Boston
March 21–23, 2002
Now in its ninth year, this conference and trade show gathers exhibitors, speakers, and experts from around the world to address contemporary issues in restoration and renovation of period buildings, interiors, and streetscapes. To be held at the Hynes Convention Center. Contact 800/982-6247 for information or visit www.restorationandrenovation.com.

XXI World Congress of Architecture
Berlin
July 22–26, 2002

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Dates & Events

The Union Internationale des Architectes invites architects and students from around the world to discuss responsibilities and strategies for environmental and sustainable design within an urban context. At The International Congress Centre Berlin. Contact 49 30 90 12 13 14.

Competitions

Travel/Study Grants Available from the Architectural League

Deadline: March 15, 2002

In memory of architect and administrator Deborah Norden, the Architectural League is awarding a total of $5,000 annually in travel or study for students and recent graduates. Visit www.archleague.org for more information.

Gold Nugget Awards

Deadline: April 5, 2002

The Gold Nugget Awards are accepting submissions for the 39th annual "Best in the West" design and planning competition. Projects from the 14 western states and from countries around the Pacific Rim are eligible. Contact 909/987-2758 for more information.

Orphaned Spaces in the Public Realm: Young Designers' Ideas Presentation

Deadline: April 6, 2002

Young architects, designers, and artists are invited to revive Pittsburgh's forgotten neighborhoods and artifacts in a competition sponsored by the Pittsburgh History & Landmarks Foundation. An award fund of $10,000 has been designated and will be distributed among the winners. For more information, visit www.phlf.org.

Bus Shelter Competition Bloomington, Ind., 2002

Deadline: April 19, 2002

The Bloomington Community Arts Commission, in conjunction with Bloomington Transit, invites proposals for three new public bus shelters to be installed along a major thoroughfare that will be improved as part of a citywide transportation project in 2002. For information, contact BloomingtonArt@aol.com or call 812/336-0564.

2002 Business Week/ Architectural Record Awards

Deadline: April 19, 2002

This annual award program recognizes distinguished collaboration between client/architect teams who use design to achieve progressive goals. Entrants may submit projects completed anywhere in the world since January 1, 1999. Sponsored by the American Institute of Architects. Contact 888/242-4240.

The Great Egyptian Museum Competition

Deadline: August 10, 2002

An open invitation to architects from around the world to participate in the creative design of this new museum. Located near the Giza pyramids, the museum will house some of Egypt's most ancient monuments and treasures. For more information, visit www.gem.gov.eg.

Events & Programs

Summer Program in Classicism New York City

June 15–July 29, 2002

Spend six weeks in New York City discovering the elegance of Classical architecture and principles of traditional urbanism. Students will have the opportunity to study with leading practitioners and work directly with a design studio community on real New York City projects. Deadline for application is April 15. Contact The Institute of Classical Architecture at 917/237-1208 for more information.

E-mail events and competitions to ingrid_whitehead@mcgraw-hill.com.

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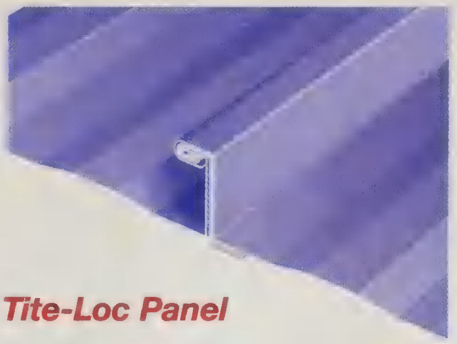

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For and about the next generation of architects

archrecord2

FOR THE EMERGING ARCHITECT

Put some candles in the cake and get ready to sing. With this, the March issue, archrecord2 turns one year old. To celebrate, we're getting our hair done and going out for drinks, courtesy of the digital designs of Jordan Parnass. Care to join us? No need to bring gifts.

DESIGN

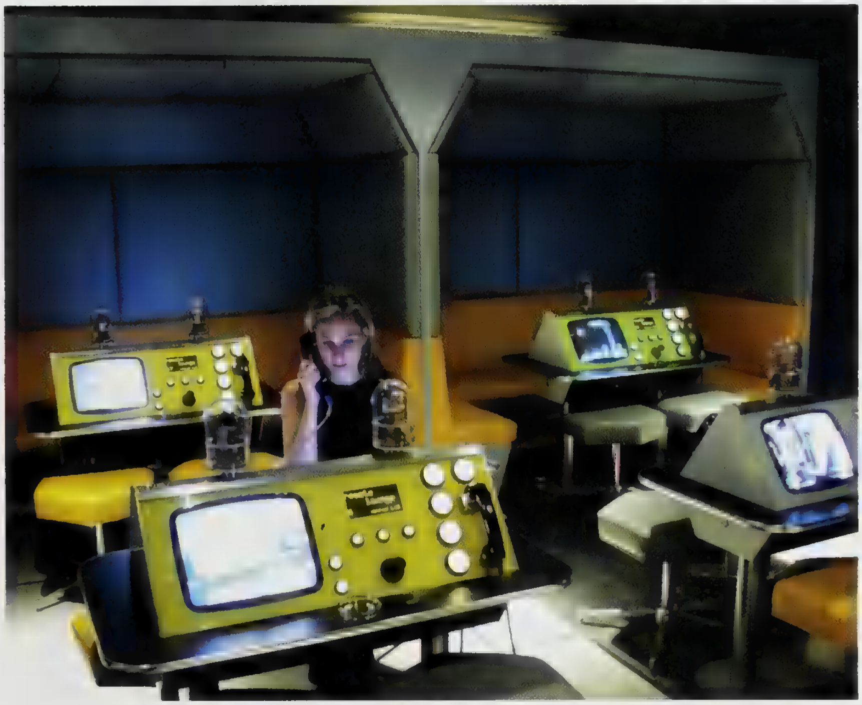
Jordan Parnass: Virtual and actual spaces

Architects, says Jordan Parnass, are trained to handle design projects of all stripes, whether they involve buildings, information, computers, or media devices. He would know—his work touches on all four. In nearly a decade of practice, Parnass has parlayed a passion for architectural and information design into a solo practice with an eclectic portfolio of interiors work, Web sites, and new media installations.

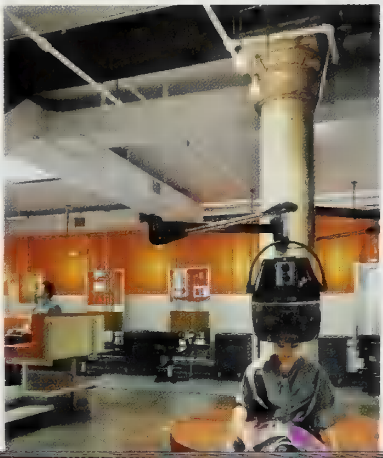
After working for Bernard Tschumi and founding a + i design corporation with two former architecture classmates from Columbia, Parnass struck out on his own in 1997, working from his Brooklyn loft and recruiting collaborators as needed for his various clients.

Many of Parnass's interiors explore how technology affects circulation, communication, and interaction. His latest New York project, the Remote Lounge, is a study in voyeurism. On a recent Friday evening, its retro-techno banquettes were packed with eager barflies who checked each other out by controlling video cameras that train their lenses on every corner of the space. Parnass admits that being spied on by strangers just an arm's length away could be "disturbing" to some, but he thinks "there's a little bit of energy that happens in that connection that you wouldn't get at other places." He notes that the Remote Lounge also attracts groups of friends who use the tools to interact in new ways. Packed with gadgetry that could let people substitute abstracted "e-lationships" for true interpersonal experiences, the Remote Lounge forces its patrons to confront their feelings about privacy, intimacy, and exploration.

Whether he's designing office spaces or Web sites, Parnass wants to make technology fun rather than ominous. "There's a nostalgia for a time when there was technological optimism, when people felt like the world would be a better place with technology," he says. "That's almost completely gone from our culture. And I think that's really sad." *Deborah Snoonian, P.E.*



Remote Lounge, New York, 2001
Jordan Parnass Digital Architecture. Lounge lizards at this Greenwich Village bar can train video cameras on each other, send text messages, or chat on the phone before meeting in person.



Oscar Bond Salon, New York, 1999
Jordan Parnass Digital Architecture and Eric Liftin. At this renovated salon, strategically placed cameras let patrons watch each other get coiffed even as their own hairdos dry.

LIVE

ArchitecTourist: Malta and Tunisia

John Cary, Jr., took a detour from his studies in Venice to see other sites around the Mediterranean. Travel with him by visiting *architecturalrecord.com/archrecord2.*

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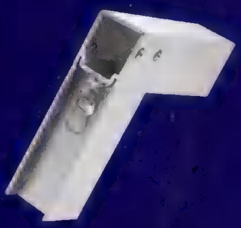

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Splitsville, U.S.A.: Why the practice and teaching of urban design is coming apart

Critique

By Michael Sorkin

I've just come back from an excellent conference—"The Physical Fitness of Cities"—which took place in Salt Lake City, then in the throes of its final Olympics preparations. Salt Lake was a heightened version of its usual dull, beautiful, weird, fascinating, and scary self. Security, needless to say, was draconian: explosives sniffers in the airport, troops with M-16s over their shoulders, elaborate credentials around everyone's neck, Jersey barriers guiding traffic, the whole nine post–September 11 yards.

Salt Lake has always been a well-disciplined city, with its rigid Mormon theocracy, its grid of wide streets numbered to reflect their distance from Temple Square, its rigorous proscriptions of daily life (no caffeine, tobacco, alcohol), and its cultural uniformity. And it has been a physically fit city, too. Mark Twain wrote in *Roughing It* that "Salt Lake City was healthy—an extremely healthy city. They declared that there was only one physician in the place and he was arrested every week regularly and held to answer under the vagrant act for 'having no visible means of support.' "

Although the event sites were dispersed over a wide area, the Olympic Village—housing the athletes, presumably the fittest people on the planet—was designed as an autonomous town, located in a set of tacky new buildings on the grounds of Fort Douglas in the foothills of the Wasatch, overlooking the city below. The military camp was itself established in 1862, ostensibly to fight the Indians but also to keep an eye on the Mormons, cannons ready to quell any excessive behavior. The village remains highly defensible, ringed by three layers of security fencing, patrolled by armed guards, and completely self-sufficient, providing housing, meals, shopping, entertainment, and health care (including the hugely controversial free condoms offered to the athletes)—the ultimate gated community.

However dull the new architecture or sinister the security, the village has much to say about the state of our urbanism—the good, the bad, and the ugly. To begin with the good: It's well-scaled and the old military quarters nicely preserved; it's walkable and wonderfully sited, right next to the university campus, another fine pedestrian ensemble. Moreover, the campus and the village are now served by a new light-rail line that runs down the hill to the center of town. For the athletes, the village represents an ethnic and national pluralism (if with a radically skewed median age) and a great place to party that's the diametric opposite of the city below.

On the other hand, in its combination of Radburn, *Blade Runner*, and *The Truman Show*, the Olympic Village is a nice reflection of the troubled picture of urban design as a discipline. It's a recombinant place that embodies many of the contending tendencies in contemporary American urbanism and the sometimes freakish results of their splicings. It's also a most cautionary place, a clear marker of the ethical depths that are associated with particular formal preferences and an object lesson in understanding that the place where strategies of

The Olympic Village in Salt Lake City reflects the contradictions in urbanism today: pedestrian-friendly but dull.

Contributing editor Michael Sorkin is the director of the graduate program in urban design at City College in N.Y.

PHOTOGRAPHY: © AP PHOTO/STEVE C. WILSON

organization meet form are where the urban rubber hits the road.

The field of urbanism has never been richer analytically nor able to draw on more diverse intellectual positions. From Camillo Sitte and Otto Wagner to Max Weber, the Chicago School, Ebenezer Howard, Patrick Geddes, Lewis Mumford, Jane Jacobs, Henri Lefebvre, Manuel Castells, Christine Boyer, Mike Davis, Peter Calthorpe, and Rem Koolhaas, the discipline teems with analysis. At this point, there is virtually no position without an extensive pedigree. Formal paradigms, however, are far fewer.

This split leaves urban design education in a parlous state. With no ideology enjoying the hegemonic sway of Modernism, the field is contested and, in many ways, adrift. This reflects its own ambivalent origins. Arguments for the starting point of the discipline are both thick—José Luis Sert and Kevin Lynch, among others, are often cited as progenitors—and largely irrelevant. While the origin of urban design as an academic field cannot be clearly attributed, it is certainly the product of a particular moment in postwar American culture and reflects, in its emergence, other schisms that have characterized the practice of architecture.

ONE THING WE DO NOT NEED RIGHT NOW IS A SINGLE THEORY OF URBAN FORM AND A SINGLE STYLE OF URBAN PRACTICE.

The great originating rift in architectural education was the parting of the ways of architects and engineers in 19th-century France and the establishment of separate academies. This division of the artistic and the technical is one of the key operations of modernity, reflected both in the continuing clash between the two cultures and in various efforts to recuperate one side of the argum[illegible] the other.

One cause of t[illegible] lies in the origins of the discipline of planning. The central ambivalence here has long lain between the idea of physical planning and the set of anterior technical, social, and economic analyses that form the basis and shape the perspective of action. The conflict is not simply internal to planning but is reflected in its fraught relationship to architecture, a product of planning's dual origins in the social sciences and social work on the one hand and the formal disciplines of architecture and landscape design on the other.

This nexus of confusion is reflected in the academy by the migrations of the field of planning within the larger structures of university organization. The planning department at UCLA (in recent years the most progressive in the country) is now split off from the school of architecture with which it had long uneasily coexisted. At Harvard, a somewhat lackluster planning department was moved out of the design school into the school of government and, in effect, replaced by the urban design program, only to be moved back and joined to urban design under a single, if bifurcated, umbrella. At City University of New York, planning is at Hunter College, urban design is in the City College School of Architecture, and many of the powerhouse intellectuals—David Harvey, Neil Smith, Setha Low, and others—are rigged into the graduate anthropology department.

This bureaucratic discomfort reflects the historical circumstances for the emergence of the discipline of urban design in the attempt by architects to recover some influence over the physical design of cities from the planners who so dominated professional urbanism in the 1940s, '50s, and '60s—the brains behind urban renewal, the interstates, suburbanization, and the paternalism of one-dimensional structures of social control. In this sense, urban design was itself oppositional; although, in another, its own position was nebulous, concerned both with questions of the rights of city dwellers (if in a crudely theorized way) and with traditional urban forms that comprised the vessel putatively necessary for the exercise of such rights.

These issues continue to run through the heart of the discipline. In many ways, this is salubrious: One thing we do not need right now is a single theory of urban form and a single style of urban practice. The best-organized candidate for such dominance—the practices clustered under the rubric of "new urbanism"—is far less influential in the schools than in the profession in general. And, happily, the internal contradictions within the group seem likely to produce more and more open schisms as the green faction seeks to free itself from the lugubrious Disneyfication-by-prescription of the historicist wing.

More influential as an academic model is the school of neoquantification, an abstract version of functionalism that seeks to translate statistics directly to form. This group has far deeper affinities with intellectual postmodernity (as opposed to the architectural revivalism sometimes encompassed by the term), and its analysis has a good deal more bite. Unfortunately, any diagram is always at risk from the next diagram and from the pushy relativism of postmodernism, with its focus on constant shifts in perspective and the incessant interrogation of the origins of value.

Another strand in the braided taxonomy of urban design has its origins in the reformism of Jane Addams, Jacob Riis, tenement legislation, the activism of the New Deal, the oppositional practice of advocacy planning, early preservationism, and the larger movement for citizen involvement in the process of urban decision making and design. Although I personally feel a deep affinity with this history, the problem with its current translation lies in a certain reticence about design. The emergent school of "everyday" urbanism, while distinct from the grim generic of the neoquants and crucial for empowering citizenship, nevertheless is too suspicious of formal experiment and overly sanguine about the dispensability of architecture as an artistic practice.

Ironically, the area of urban investigation that seems to have the least influence in the architecture schools is environmentalism, the panoply of practices and investigations subsumed by questions of "green." Part of the reason is political. Unlike the European greens, our domestic variety has tended to be more delimited in its analysis, more focused on the aesthetic, spiritual, and medical consequences of deleterious environmental policies than on issues of maldistributed resources and the political effects of globalization. And part of the reason is that green architecture is only beginning to make a sufficiently compelling and comprehensible formal case for itself in this country. The upshot is that sound environmental design practice is the most undertaught subject in American architectural schools.

Every second, three people are born on the planet, two of them in cities. Urbanism is in crisis: The condition for billions of people in our cities is wretched, and we need to rapidly refit our dysfunctional metropolises for justice and sustainability and build new cities around the globe. Urban design is a discipline—however it sorts out its relations with its professional siblings—that must be the site of a merger between social, environmental, and formal practices. If we designers are to have a relevance beyond that of stylists or critics, we must produce convincing forms—as many as possible—for this coming together. While many schools of this urban joinery might and should emerge, there is no way a satisfactory urbanism can be taught that slights any of these aspects. Let a thousand urbanisms bloom! ■

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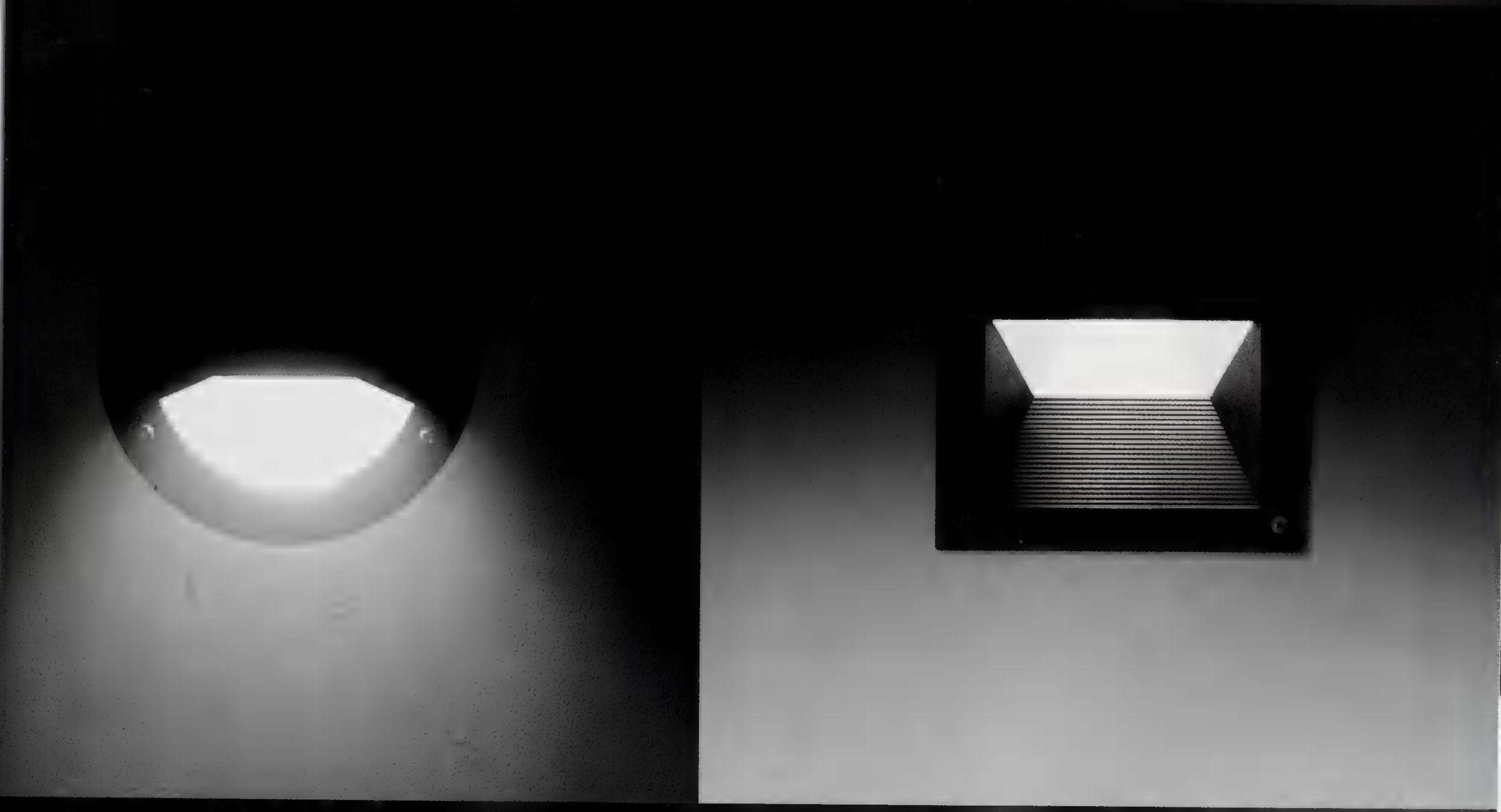

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Fear must not become a form-giver for architecture

Practice Matters

By Charles Linn, FAIA

The terrorists were remarkably effective in what they did—it goes without saying that the events of September 11 have changed all of our lives forever. In recent months, most of us have been living with more anxiety than we are accustomed to. Our hyperactive news media keeps us on the alert for a new race of super villains capable of harming us with everything from home-brew bacteria to tennis-shoe bombs. The greatest power of these foes is their ability to defy description. No one knows who they are, where they will strike, what weapons they will use, when they will do it, or why.

As a consequence, the work architects and engineers are asked to do to protect the health, safety, and welfare of the public has taken on new dimensions. Security and threat assessments are a growth industry for us. Those who take on this work are expected to determine if buildings are safe, and if not, to show how they can be made so. But isn't the subtext really, "How can the people who use this building be made to feel safe? Can you help us feel we are in control of what cannot be controlled?"

On the face of it, this seems out of the architect's purview. The psychological fortification of people against the unknown and unseen has always been the province of others: theologians, who traditionally counsel believers to have more faith; and mental health professionals, who may prescribe therapy, drugs, or both. We never thought this task would fall to us, but now it has. Now we must learn to show our clients how to deal with the unknown, and to do it as responsibly as anything else we do. And we will.

CONTINUING EDUCATION

This article is a companion piece to this month's Building Science story, starting on page 135. You must read both articles to answer the Continuing Education Questions on page 226.

Our own trauma

The process of learning to assuage the fears of our constituency will require that we come to grips with the profession-specific trauma many of us have experienced as a result of that horrifying day. The collapse of the World Trade Center violated every principle of physics and engineering that we have placed our faith in for our entire professional lives, and it happened right in front of us.

We may have disliked the design of the buildings, thought they were an insult to the skyline, or hated them because they seemed to embody the arrogant soul of capitalistic greed. But, no matter what we thought of them, they were, unquestionably, a technical triumph. They were a symbol of what we are capable of doing when we are at our most determined and inventive. They were resistant to all of the forces we could conceive. While it seems uncertain exactly which American ideals the terrorists were trying to obliterate when they attacked, they certainly could not have done anything to wound the confidence of architects and engineers more completely than to bring about the destruction of the twin towers. This kind of failure is unknown to us—the training architects and engineers receive and the codes that guide us are so thorough and so good that only a handful of us will ever have a building we designed destroyed by a fire or structural failure. Nothing in our training prepares us for the feelings of grief and helplessness that doctors experience when, despite their most intelligent and heroic efforts, a patient is lost.

Now, when people ask, "Can it be made safe?" we can no longer punch numbers into a calculator or pick up a copy of the life-safety code, and say, "Yes, it is safe because it says so here." Instead, we have all been reminded in the most devastating way possible what we have always known: The qualities that make people feel safe when they occupy the environments we design are not to be found within equations or codes.

The greatest danger

We already have much experience designing some of the safest, most secure buildings possible. They aren't embassies or airports, but gated communities that combine studio apartments with on-site dining, recreation, and health-care facilities. Most people don't live in them willingly, however—to get into prison you have to be convicted of a crime.

Obviously, people do not envision that, when they ask us to create a place that is safe, we will give them a jail. Still, the greatest danger our profession faces now is that in solving the security problems set before us, we will overcompensate, either because we are still being affected by what we saw on September 11 or because our clients believe they are in much more danger than they really are.

Yes, it is absolutely necessary that we create infrastructure that protects people and property where threat is high; for example, at airports, schools, courthouses, and embassies. But those places are the exception, not the rule. It will be a mistake our profession will long regret if we incarcerate those who have given us their trust inside oppressive architecture.

The greatest service we can offer our clients is to remind them that living rich and rewarding lives means accepting reasonable amounts of risk—architecture cannot be kept open and alive without it. What our profession must do now is to calm people and to help them understand which risks can realistically be dealt with through architecture and which cannot.

In the late 1920s many delightful Modernist buildings were built in the Soviet Union. As Stalin ascended to power—and became more and more paranoid—this open style was repressed and replaced by plain, gray, fortified architecture. It reflected the dictator's unbridled terror—of his own people and the outside world.

We can't let fear do this to our architecture. ■

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A New York exhibition looks toward the future of the World Trade Center site

Exhibitions

By Sarah Amelar

A New World Trade Center,
Max Protetch Gallery, New York City
(January 17–February 16, 2002).

Two weeks after the terror of September 11—when the ruins were still burning and acrid clouds enshrouded lower Manhattan—New York City gallery owner Max Protetch conceived of an exhibition that would present architects' proposals for "a new World Trade Center [WTC]" on the existing site. "Architects, as you know, must always be optimists," he wrote to a small group of architects. "As saddened and troubled as we all are about the events of September 11," he continued, "we look to you to create a better future.... Now, more than at any other time ... there is an opportunity to show an expanded public the ways in which architects can transform the world."

Protetch soon engaged advisors, including the editors of RECORD, to extend the roster of invited participants to 115 architects, plus a few artists represented by his gallery. The final list was international, featuring world-famous practitioners, alongside risk-taking upstarts. But was it presumptuous to think that architects could transform the world? And was it too soon to consider the future of New York's festering, gaping wound?

Some thought so, but others were grateful, as architect Craig Hodgetts put it, "for this mechanism of personal and collective healing, this means of opening up the conversation." They hoped the show would productively slow the response process, curbing bureaucratic impulses to rebuild too hastily.

Yet some architects were wary of seeming opportunistic, as if rushing to promote themselves or to profit in the wake of disaster. One passage in Protetch's letter raised concerns: "The gallery will split the sales price [of the exhibited work] with the architects, and we are open to any suggestions of charities to which we could contribute a portion of the proceeds." Several architects resolved the dilemma by determining to donate their entire share, if the work sold, to a September 11 victims' fund.

Among those accepting Protetch's invitation were Zaha Hadid, Steven Holl, Daniel Libeskind, Thom Mayne, Eric Owen Moss, RoTo, and more than 50 others. The response grew as unsolicited work made its way into the show, which later opened to massive crowds, lines around the block, and a media frenzy.

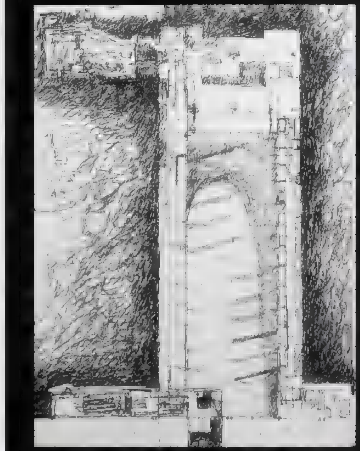
With drawings and models generated in a few weeks, the proposals were clearly the sparks of ideas, rather than builder-ready schemes.

Certain themes, concepts, and formal approaches threaded through the show. It begged the question of how much of the site should become a memorial and how much should go to the rebirth (at least programmatically) of the obliterated structures. A surprising number of schemes recreated gargantuan towers. A large group also retained the Twin Towers' footprints as a memorial. Many of the proposed volumes, including those by Ocean, NOX, Office d'A, Asymptote, and artist Vito Acconci, were melded, contorted, deformed, or punctured—as if subliminally, if not explicitly, evoking the catastrophe of 9/11.

A few architects stepped back from Ground Zero altogether, such as Field Operations, which proposed a memorial earthwork for Fresh Kills landfill, a major WTC recovery site.

Changeable, often electronic building skins—an already familiar notion—cropped up in various guises, some with victims' names or faces.

But many schemes seemed



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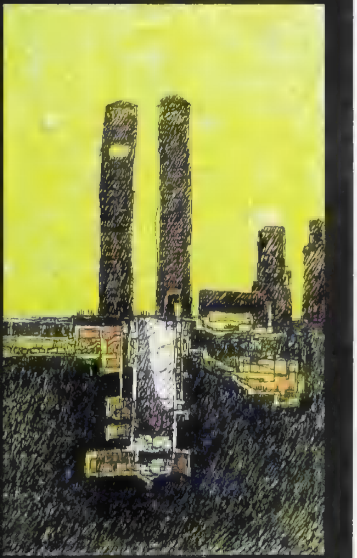

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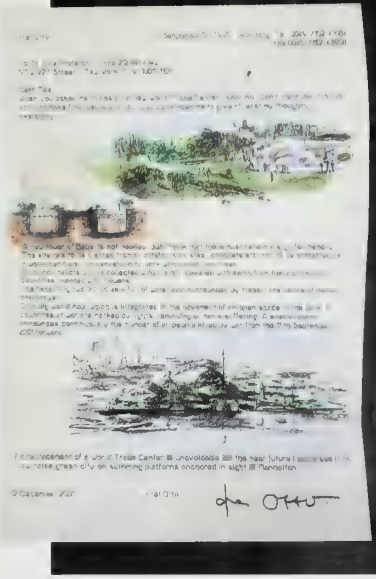

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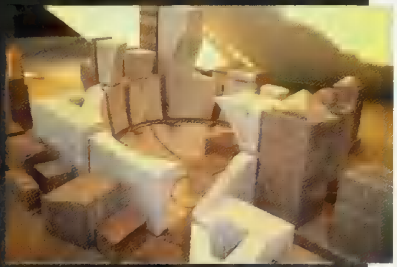
Frei Otto



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Proposals by Sam Mockbee (1 and 2), Frei Otto (3), and RoTo (4).

IMAGES COURTESY THE ARCHITECTS AND MAX PROTETCH GALLERY less emotional or visceral than one might have expected. Several were glib, and others appeared as formal exercises, drawing on the bag of tricks du jour.

Cleverly, proposals such as Winka Dubbeldam's interactive cyberpiece and Della Valle & Bernheimer's blocks were presented as games, analyzing, with self-aware superficiality, the economic and social forces that might shape new construction at the WTC site.

A few of the foreign architects, far from New York's shore, approached the tragedy with a light, goading, or even appallingly flip, attitude. As Kas Oosterhuis of Rotterdam wrote: "Come on, America, wake up.... Let's face it. Everybody was fascinated by the 9/11 event. Everyone was thrilled to watch the movie, over and over again. Only extremely disciplined individuals could resist."

At the spectrum's other end were stirringly poetic works by Frei Otto and the late Sam Mockbee, as well as the widely publicized *Towers of Light*, luminous and ghostly shafts by John Bennett, Gustavo Bonavardi, Julian Le Verdiere, Paul Marantz, Paul Myoda, and Richard Nash-Gould. Mockbee's vision, sketched on his deathbed, recreates towers, but focuses on the experience of spiraling down to a subterranean chapel. Like proposals by Steven Holl and others, Mockbee's is about bearing witness to the site. But it is also about the power of descent into darkness to confront loss.

A desire to see the collection extended far beyond the gallery. Filmmaker Michael Blackwood is creating a documentary on it. A catalog is also in progress. World-transforming ideas or not, the ensuing dialogue clearly sounded a resonant chord. ■

www To see all the schemes and accompanying texts, visit **architecturalrecord.com**.

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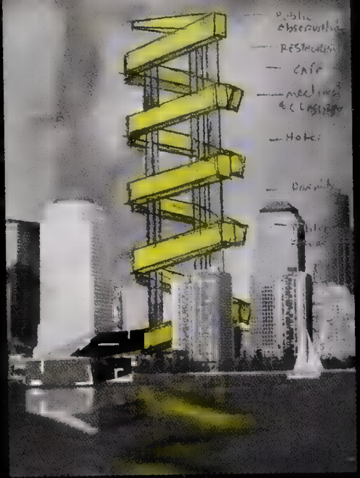

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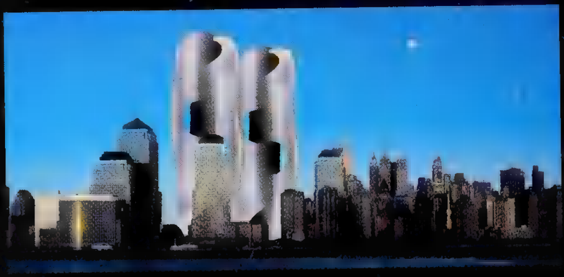
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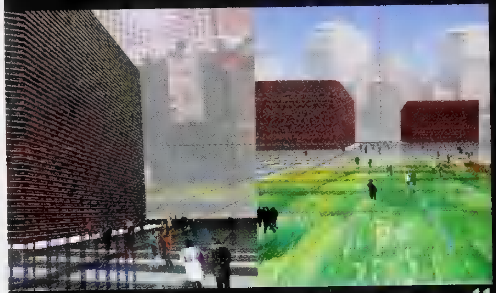
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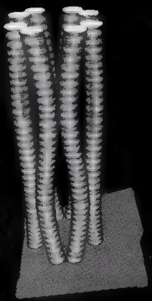
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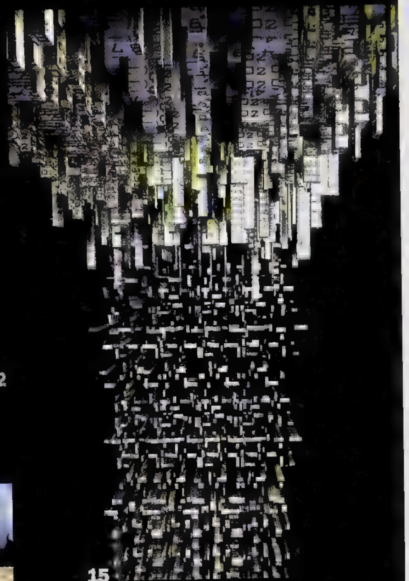
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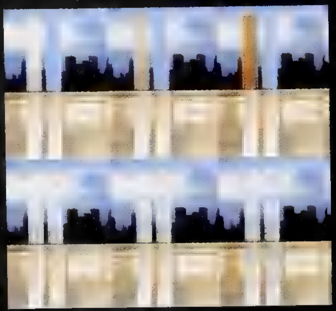
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Proposals by Raimund Abraham (5), Oosterhuis Associates (6), Steven Holl (7), Daniel Libeskind (8), Kennedy & Violich (9), Asymptote (10), Alexander Gorlin (11), Foreign Office Architects (12), NOX (13), Gluckman Mayner (14), Zaha Hadid (15), and Weiss/Manfredi (16).

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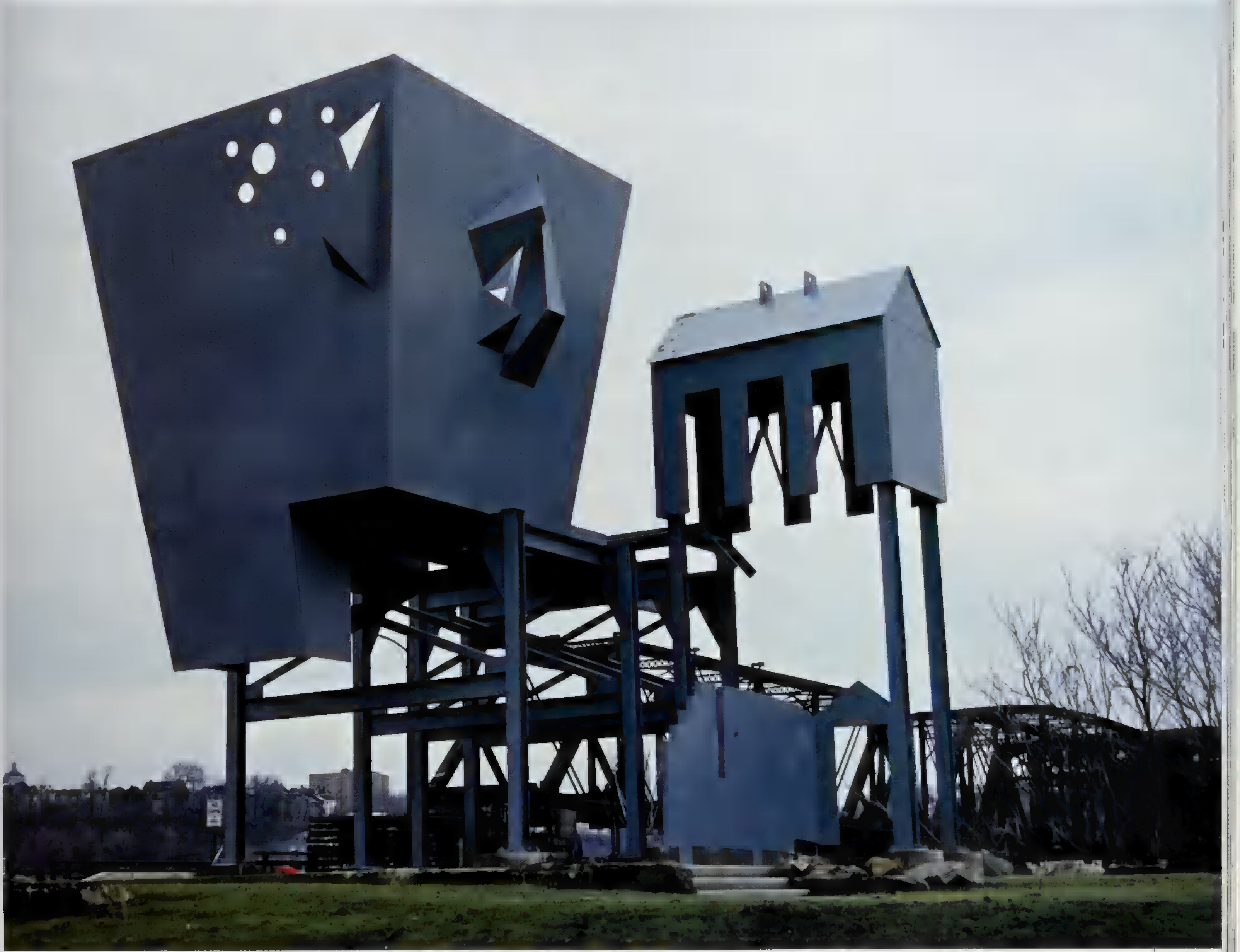


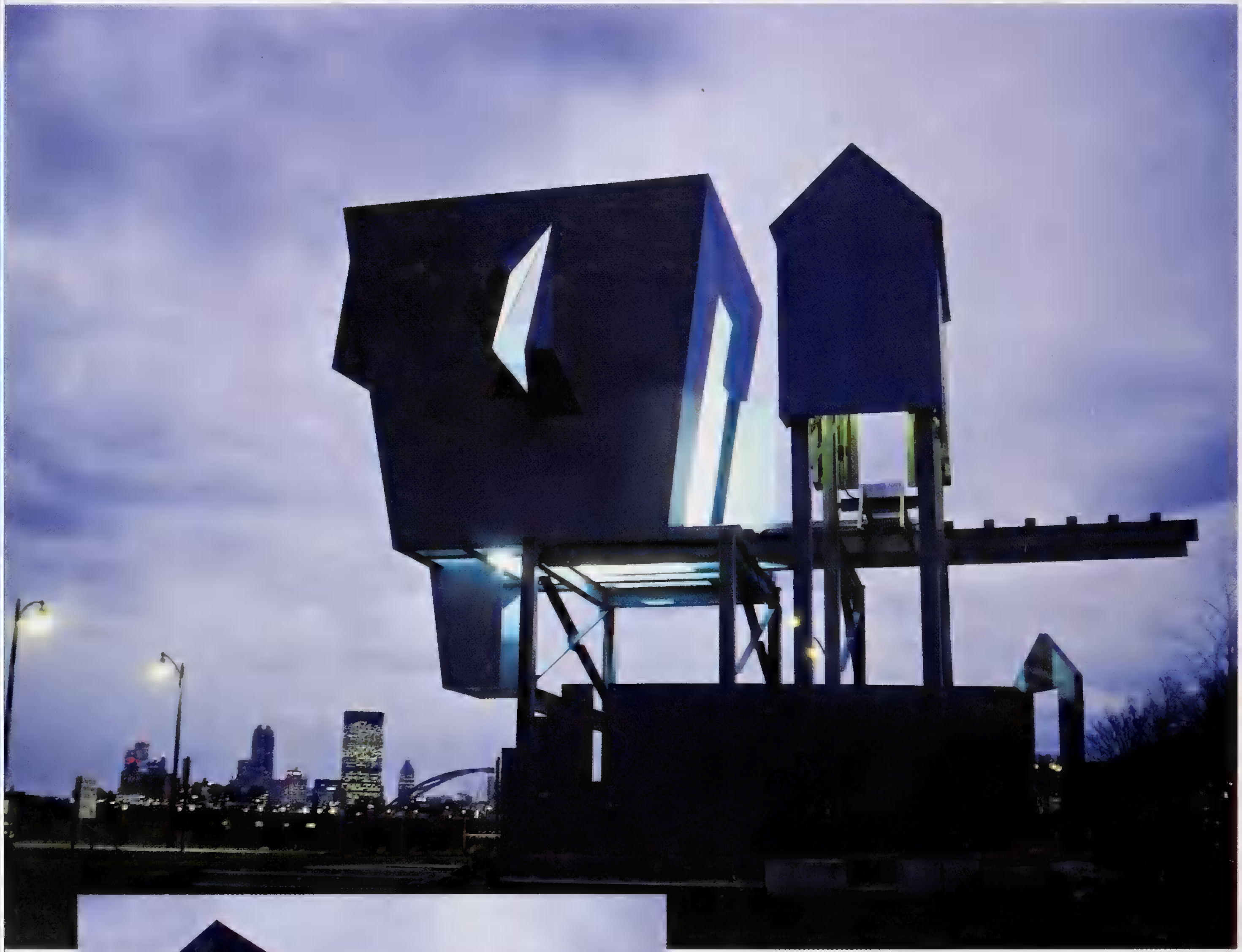
By Ingrid Whitehead

Remembering those who forged an age of steel

The South Side of Pittsburgh was once a place where huge trucks shook the earth, whistles screamed, iron clanked, and a person could read a newspaper at night by the light of the glowing sky near the steel mills. The mills may be gone, replaced years ago with residential and commercial development, but the legacy of the workers carries on through songs and poems, and, now, a monument honoring the men who endured the searing heat and backbreaking work.

James O'Toole, a graduate architect working in the design department of L.D. Astorino Architects in Pittsburgh, heard of the City of Pittsburgh's competition for a sculpture to be built on the site of a former steel mill, next to the city's just-completed, largest park. Inspired by a visit to a working steel mill and by the stories of former steelworkers, O'Toole's winning vision took more than muscle to see through, and cost much more than the city's award of $25,000. A self-described "architectural bandit," O'Toole had to personally raise $350,000 for the project itself, and $40,000 for the necessary landscaping. He credits his

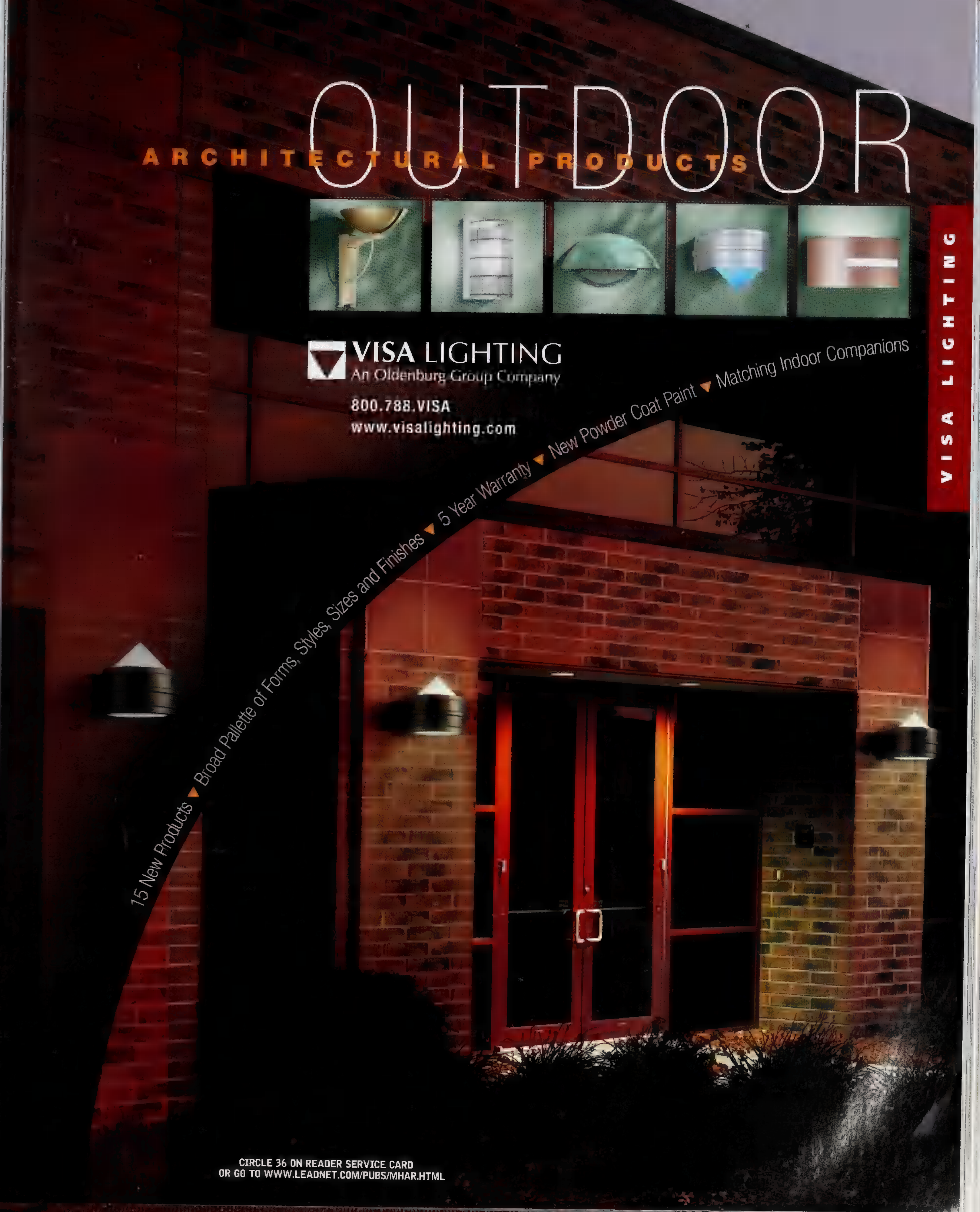
PHOTOGRAPHY: © VICTOR BELTRAN



employers Lou and Dennis Astorino for giving him the means and the encouragement to finish the job. The Astorinos opened doors to contractors, politicians, and other resources for O'Toole, and mentored him through the three-year project even when the obstacles to completion seemed impossible to overcome.

But in April of 2001 the completed memorial became a memorable part of the city's landscape. The project stands 50 feet tall and appears as a progression of interconnected structures. A bottomless, skeletal shed hovers above a 70-ton ladle, into which rainwater—reminiscent of the molten steel that once flowed at this site—is collected and flows into a network of gutters terminating at a pool below. [illegible] shedlike unit a grate creates a path over cantilevered train tracks that leads to a sloping component supporting the ladle and its descending channel. The sloping structure is pierced with crystalline-shaped holes, letting light bounce and refract off its reflective steel walls. Made entirely of concrete and steel, and lit from within, the structure gives off an eerie glow at night, much like the mills did 100 years ago, when graphite particles glowed in the air like fireworks.

"The intention of the project is to incite reveries," says O'Toole. "How can intense heat and weight be replaced? Water now invites you to stick your arm in, reminding visitors of a wetness that would once have melted flesh." ■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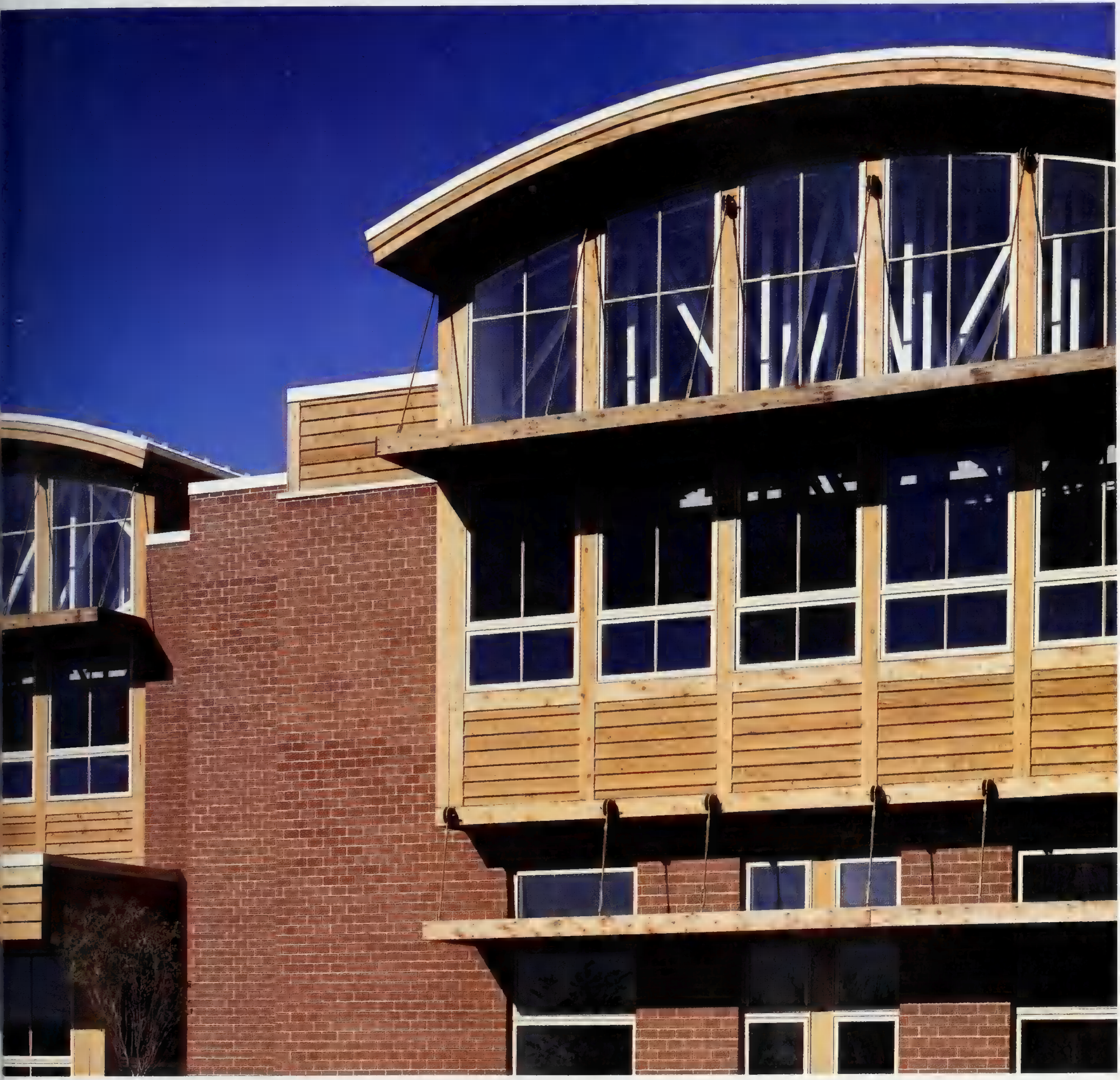

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The City remade, from Boston to Berlin

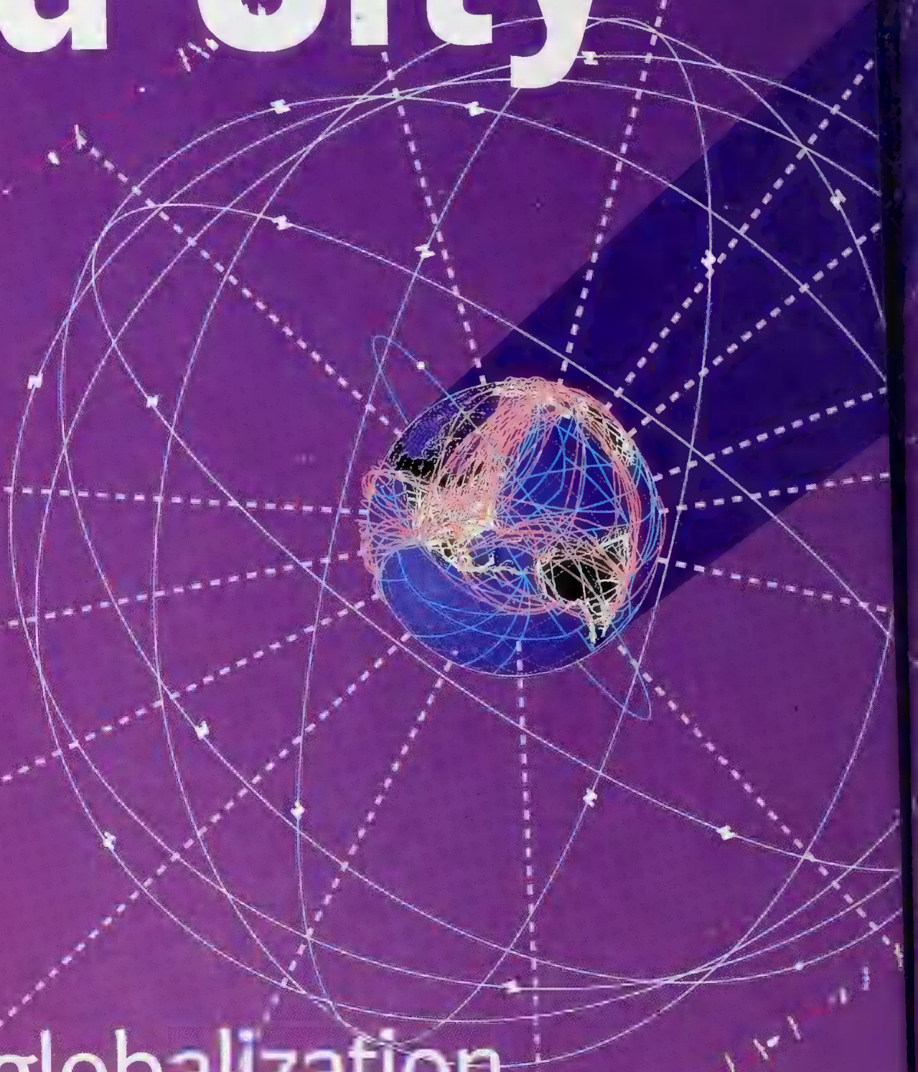
Engaging design and the city at meta- and micro-scales

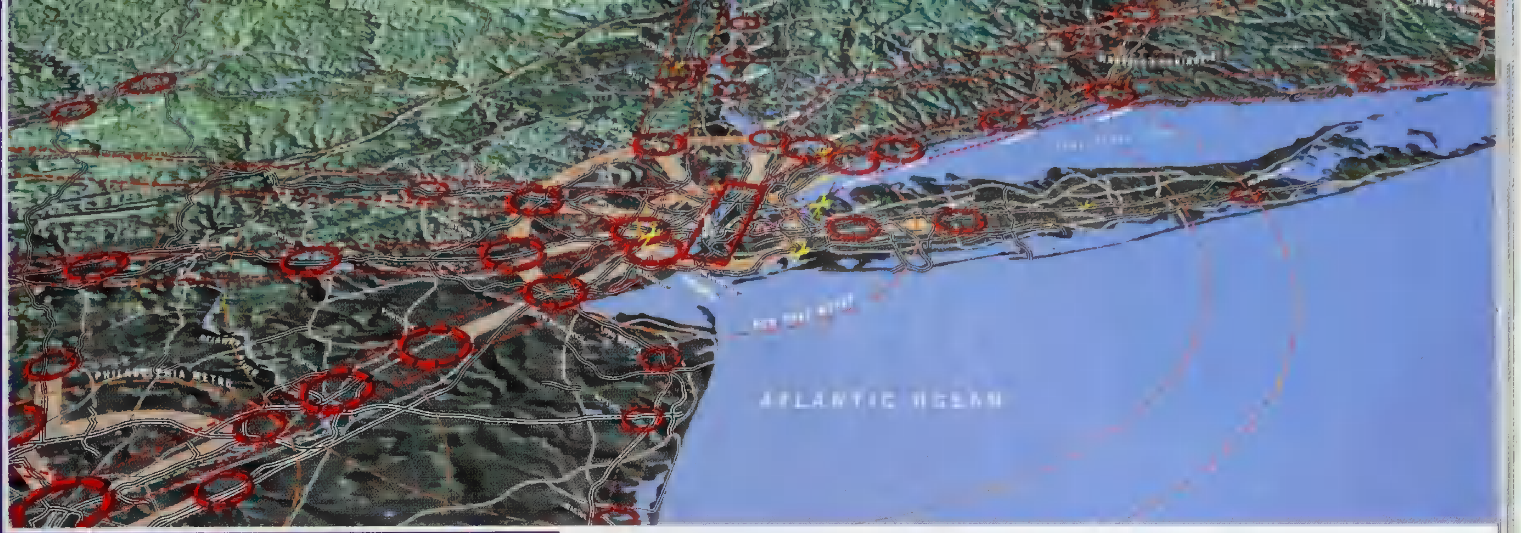
Whether the point of view is cosmic or granular, we are witnessing the broadly based engagement of design and the city. From the stellar perspective, new methods of envisioning the world, based in part on the mating of comprehensive satellite photography and digital technology, allow architects and planners like Michael Gallis to make connections where we hadn't realized they existed. What is the shape of the meta-city? How far has sprawl taken us from our urban centers? And how is the succession of urban places linked? Today, rather than postulating or imagining, we can actually see, through Gallis's comprehensive graphic lens. His drawings, moreover, have an unearthly beauty of their own. Looking in more closely, Berlin and Boston have taken entire swaths of land and made them new. In Berlin's case, Potsdamer Platz has constituted the largest construction site in the world, garnering our attention for a decade. How has it fared? What sorts of precincts, neighborhoods, and buildings have resulted from this concentration of capital and energy? James Russell has been following the German capital's progress, with both admiration and reservations. And what has resulted from clearing the debris away from Boston's massive Big Dig—this continent's largest urban redevelopment? Robert Campbell, *Boston Globe* critic, provides answers. From the ground, our cities are employing world-class talent to bring otherworldly qualities to real-world projects. Witness Milwaukee and Philadelphia, two cities that invested in design to propel their fame far beyond the city limits. All lie within the following pages, from the heavens to urbane earth.
Robert Ivy, FAIA

MAP COURTESY BERLIN OFFICE OF URBAN DEVELOPMENT

World City

Why globalization makes cities more important than ever





Global-economy connectivity includes layers of satellites as well as air and shipping trunk lines, all distributed through urban hubs like the New York metropolitan region (above).

IMAGES © MICHAEL GALLIS & ASSOCIATES

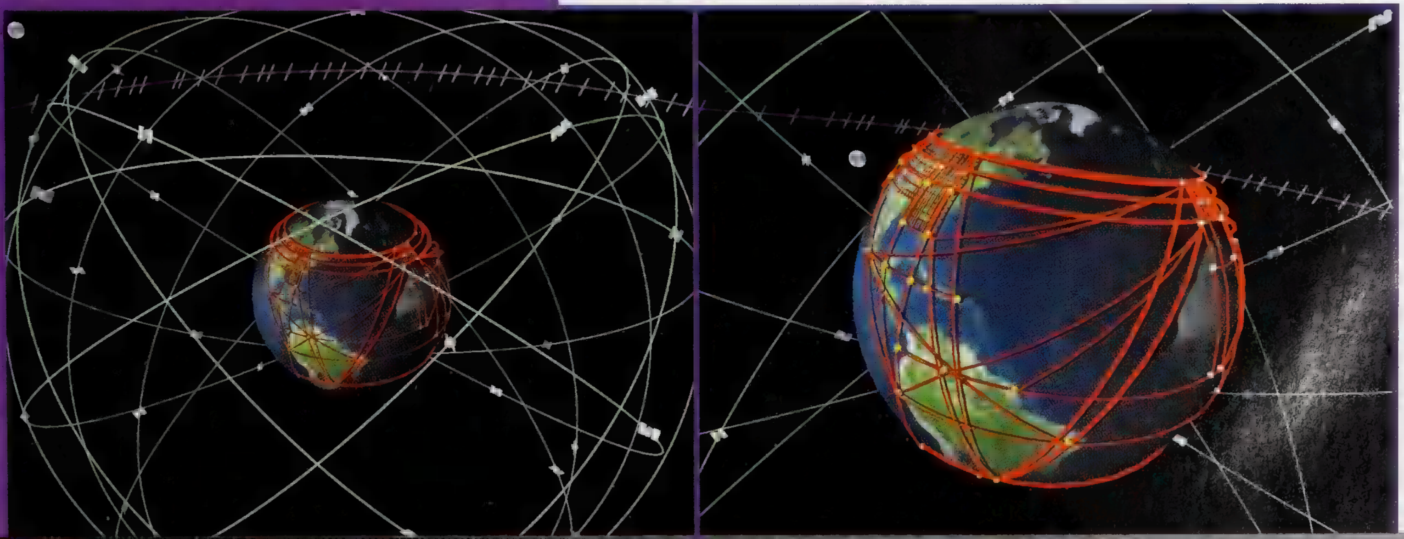
By Michael Gallis with James S. Russell, AIA

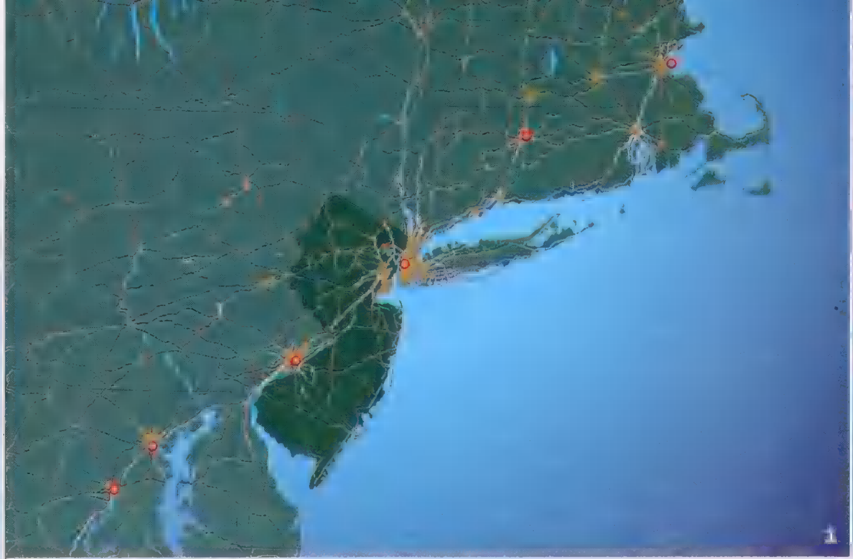
We're all post-industrial now. Or at least that's the fashionable line. Cities that united people and ideas are becoming anachronistic, the reasoning goes, so we should expect to work from anywhere and watch old cities shrivel. Let's just move on to virtual communities: a self-revitalizing electronic universe of total connectedness. Anyone stuck in a "post-industrial" traffic jam, however, will attest to how naive it is to expect that electronic communities will soon replace the real thing.

We're here to argue that in a globalizing age real cities have become more important than ever, but they are taking on new form. The factors that have historically determined the fate of cities—the depth and diversity of their human infrastructure along with the quality and quantity of their connection to movement networks (not just electronic ones)—apply today more than ever. Globalization of the marketplace, technological advancement, and the organization of knowledge do form the basis of the 21st-century economy, just as the techno-gurus argue, but this economy is also moving more people, information, and goods over more physical infrastructure than ever before.

The "virtualness" that technology has made possible is not nearly as important as the *connectivity*—and it is the increasing ways in which we are linked that is causing a new kind of urbanity to emerge that we call the "world city." If you don't have connectivity, you can't design athletic shoes in Oregon and make them in Latin America from fabrics

Michael Gallis's Charlotte, N.C., consulting firm positions cities within the emerging global economy. Editor at Large James S. Russell, AIA, has consulted to Gallis.

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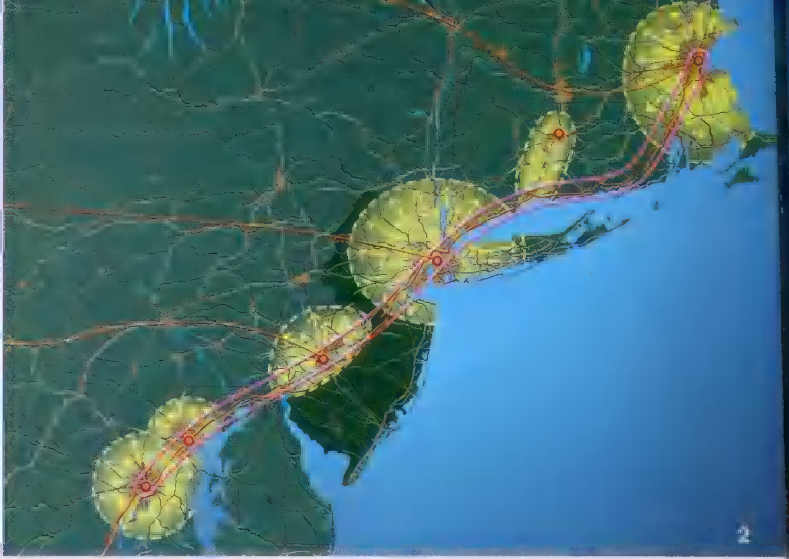
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The discrete cities that dotted the 450 miles from Boston to Washington, D.C., in 1945 (1) sprawled into suburbs by 1990 (2), later exploding over a gigantic landscape (opposite, 3) partly due to globalization.

woven in Asia out of petrochemicals processed in Texas—and then sell them worldwide.

World city is not a single bloblike urban conurbation seeping over every acre of the globe. But the vast networks of all kinds that girdle the world are so intertwined that they unite existing cities in a single global urban entity (as diagrammed on previous pages). In these networks, cities are the hubs for making, for distributing, and for consuming. They will succeed in the coming century in much the same way they've always succeeded—by adapting to evolving networks of connectivity (bottom, this page and opposite).

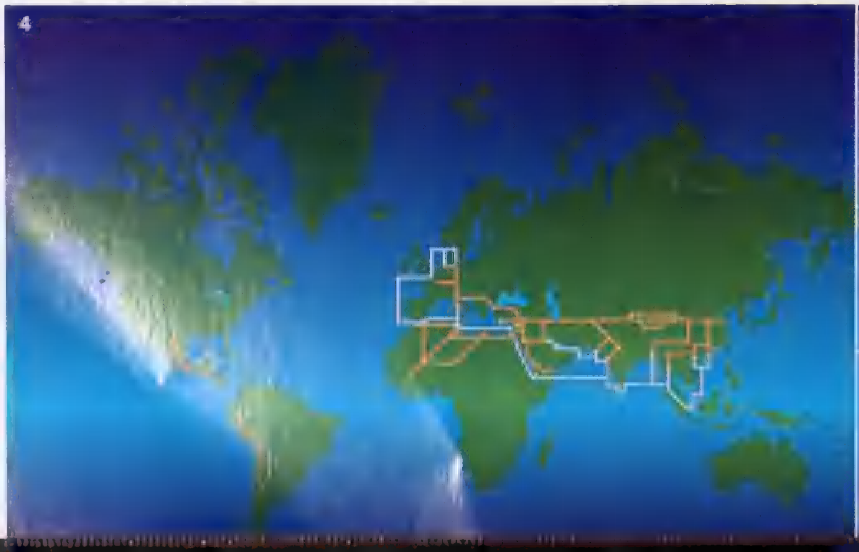
Census data shows that Americans are gathering in the largest metro areas (if not precisely in the big cities within those metro areas). That's because economic growth is occurring in those places that have the depth and diversity of expertise to serve vast and diverse global markets (in terms of education, R&D, health care, culture, arts, sports, and recreation) and the best global connections (air, rail, road, water, telecom). The importance of cities in these networks corresponds to the quality, quantity, and diversity of their connectivity. One reason BMW distributes parts in Senatobia, Mississippi, is its proximity to airports in Memphis, which Federal Express has turned into one of the busiest freight hubs in the world.

The notion that cities need physical infrastructure more than ever is heartening to architects, because designing what cities are made of is what architects have traditionally done. But the complexities of the world city also calls on people who can make abstract notions understandable through visual means and who can pick patterns out of the global information tidal wave.

The patterns our research picks out show that the fast-evolving global network is shaping cities in ways we have largely failed to anticipate, causing urban places to mutate into new forms that we don't wholly understand and that we certainly have not yet attempted to plan, manage, or design. The collapse of Communism, the gradual integration of China, Russia, and its satellites, along with the growing scale of world enterprise, has begun to make obsolete the idea of trading nations, replacing it with continent-scaled trading blocs. The introduction of a single currency in Europe this year is only the latest evidence of that continent's integration. Trucks line up for miles at the Texas/Mexico border thanks to the North American Free Trade Agreement—which has created a three-country North American trading bloc.

Within these blocs we find a hierarchy of urban hubs. In America, these are not just big cities, or even big cities and their suburbs. They have morphed into metropolitan regions: multicentered, multijurisdictional urban networks, encompassing older cities and suburbs and the suburbanizing hinterlands—the host of smaller towns functionally linked to the metro core (as in Memphis, opposite, above right, though each takes a distinctive form). It takes a metropolitan region in today's economy, since it can offer the scale, diversity, and complexity called for by the global economy: depth in key knowledge-based fields like technology, finance,

Cities throughout the ages have succeeded by linking themselves together: the Silk Road (4); the Age of Sail (5); the Age of Steam (opposite, 6); and our age of oil, autos, air, and telecommunications (opposite, 7).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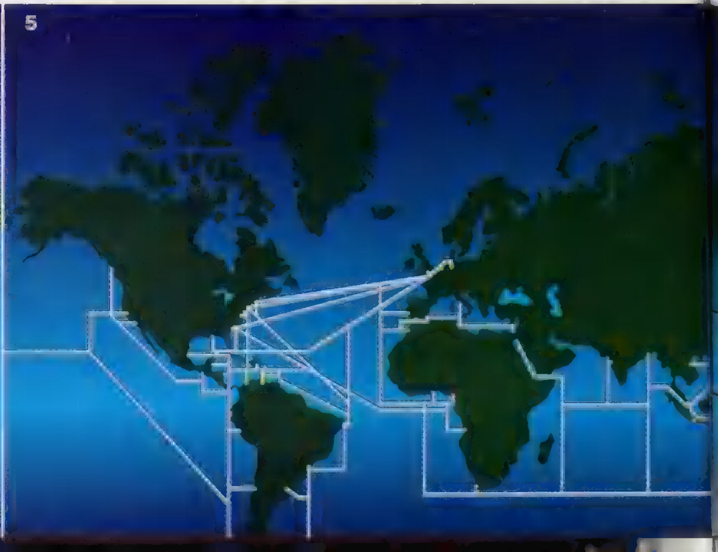
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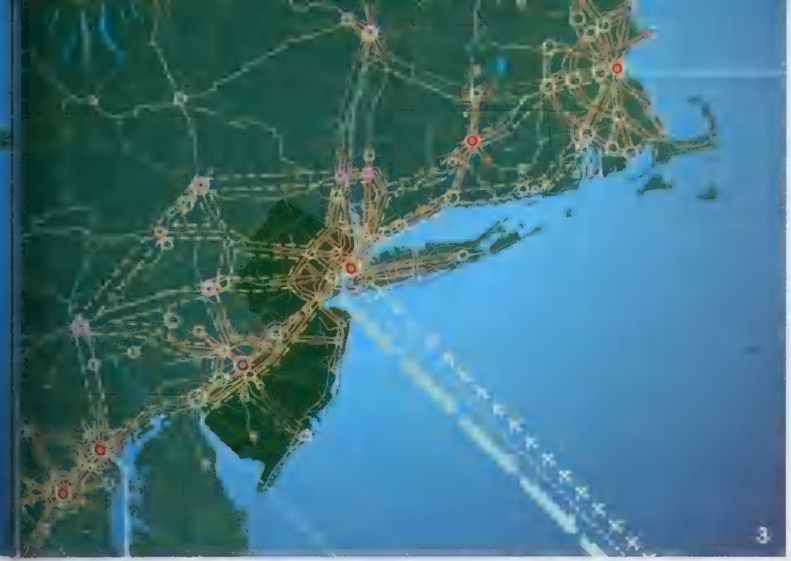
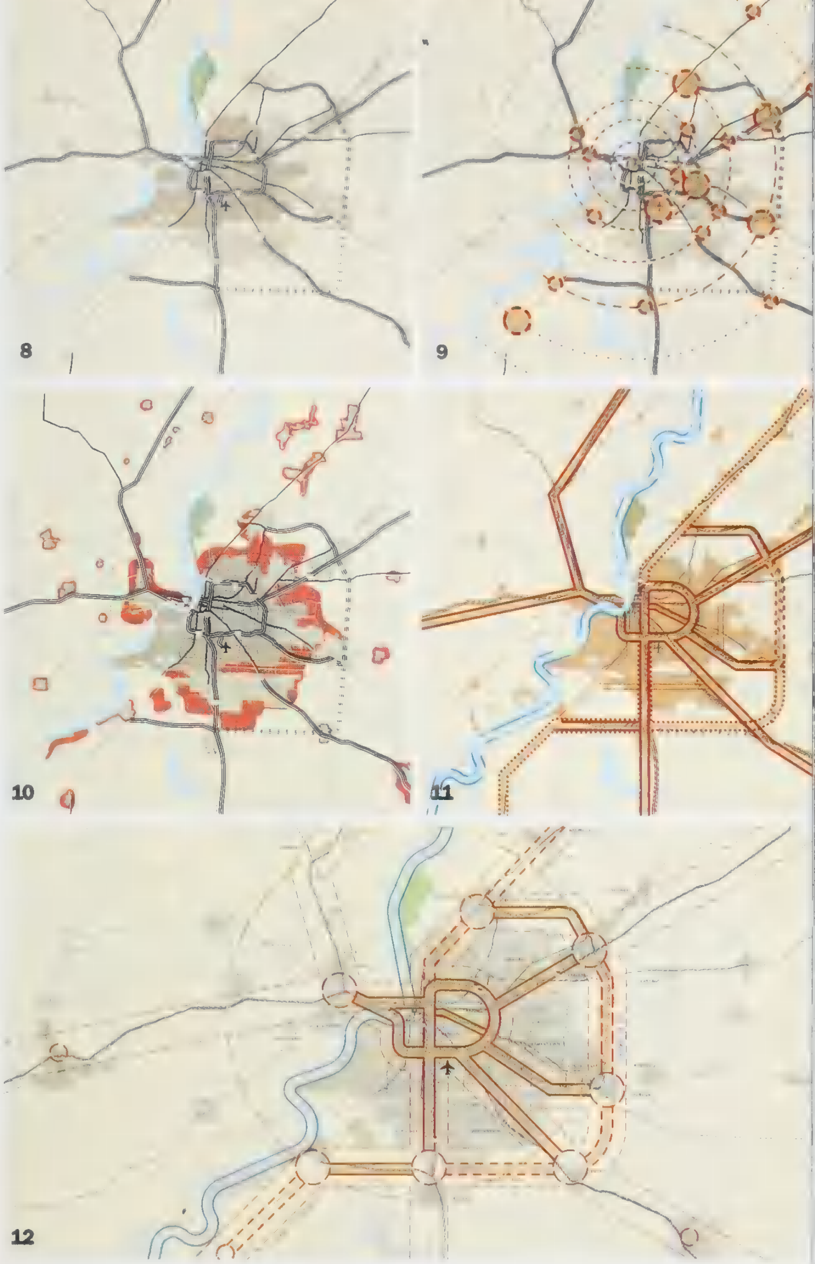


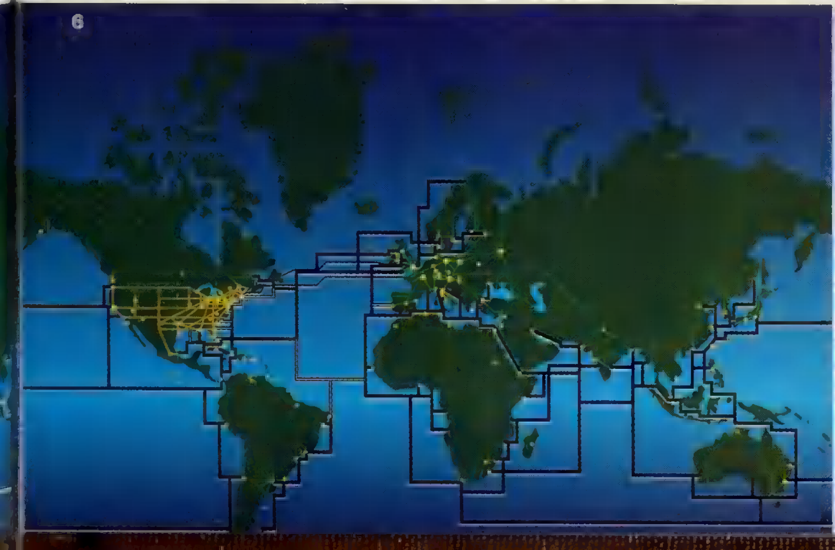
media, and law; and a substantial infrastructure of educational, medical, research, cultural, and arts institutions. Cincinnati is not just the few dozen square miles within its city limits; it's really a 60-mile-diameter "market space." Larger metro areas stretch across hundreds of miles.

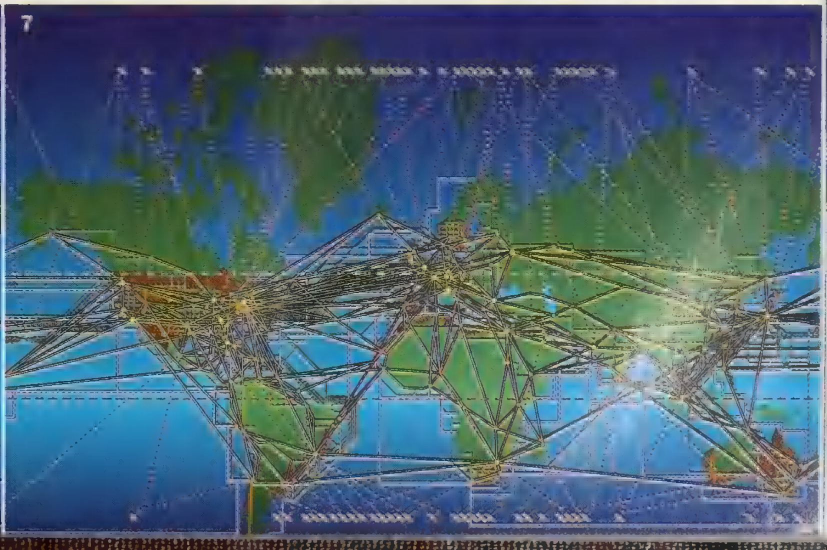
No one planned this scale of urban transformation. Indeed, few people yet understand the developing patterns. But these new urban forms create a variety of unintended consequences. In a study of New Jersey, for example, we learned that distribution activities that once took place within a few blocks or a few miles of the vast Elizabeth container-ship docks now occur as far away as Harrisburg, Pennsylvania—160 miles west. These growth eccentricities (and accompanying land-use conflicts and enormous increase in traffic) are encouraged by the failure of dozens of cities and three states to understand the consequences of changes in port activities and retail-distribution concepts and the way these affect the region. Thanks to congestion and high land costs in more developed locations, what was once a linear Northeast Corridor between Boston and Washington, D.C., has metastasized into a lattice of big and small centers sprawling over 10 states and thousands of highway miles (top, opposite and this page), with profound consequences for affected communities.

It has been convenient to regard urban growth and change as unmanageable or best left to market forces alone. The patterns we are detecting show more dramatic, and potentially damaging, effects globalization can have on the places we live in, and how important it is to understand and plan for them. Economic integration with the world is inevitable for the U.S.—indeed, the nation has benefited enormously from it. The world city is the largest form of architecture we make. Are we prepared to design it? ■



Memphis thinks of itself in terms of separate political units (8), but economic activity draws small towns into the urban orbit (9). Growth (in red, 10) crosses boundaries and aligns to road corridors (11), driving the form of a giant metro region (12).





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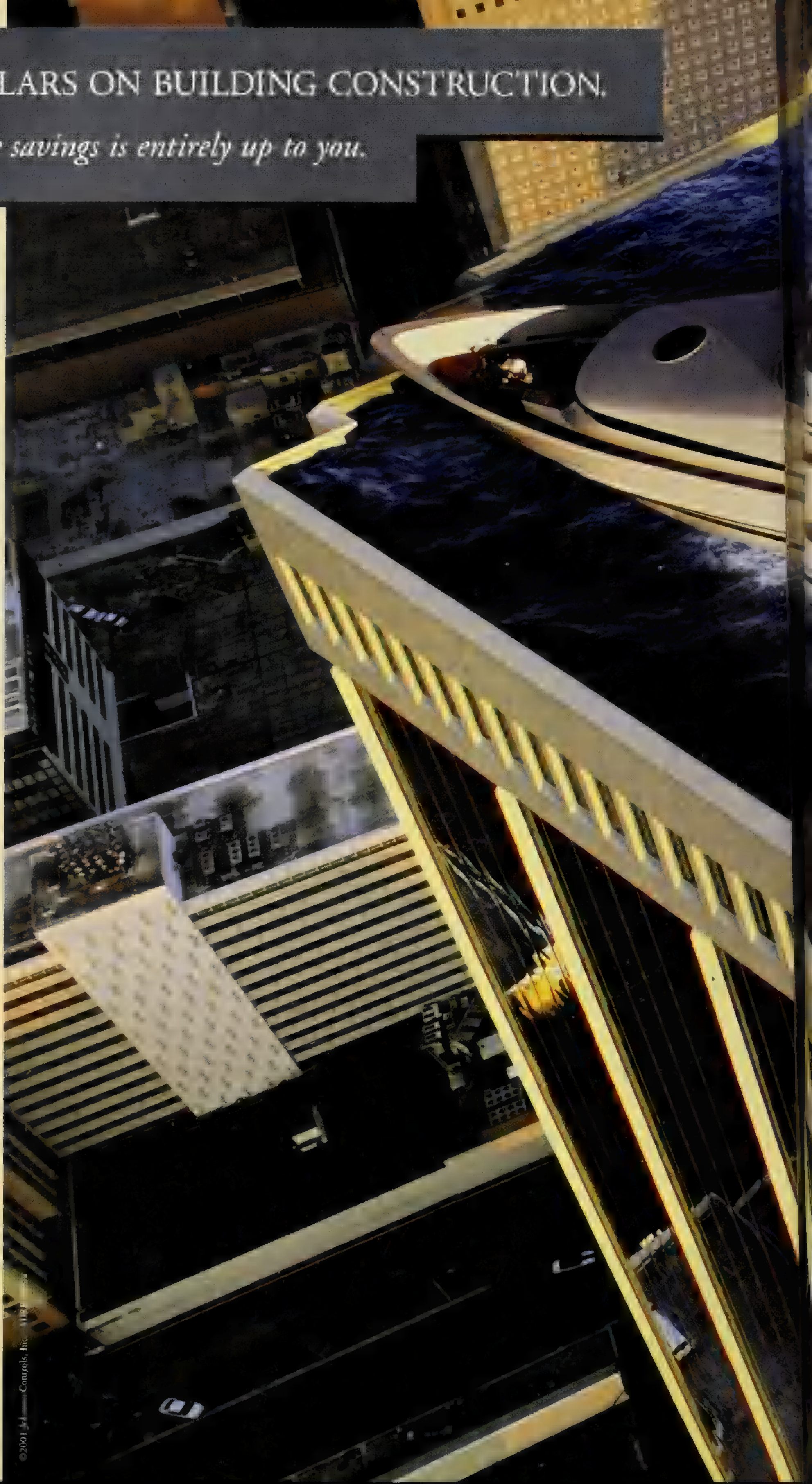

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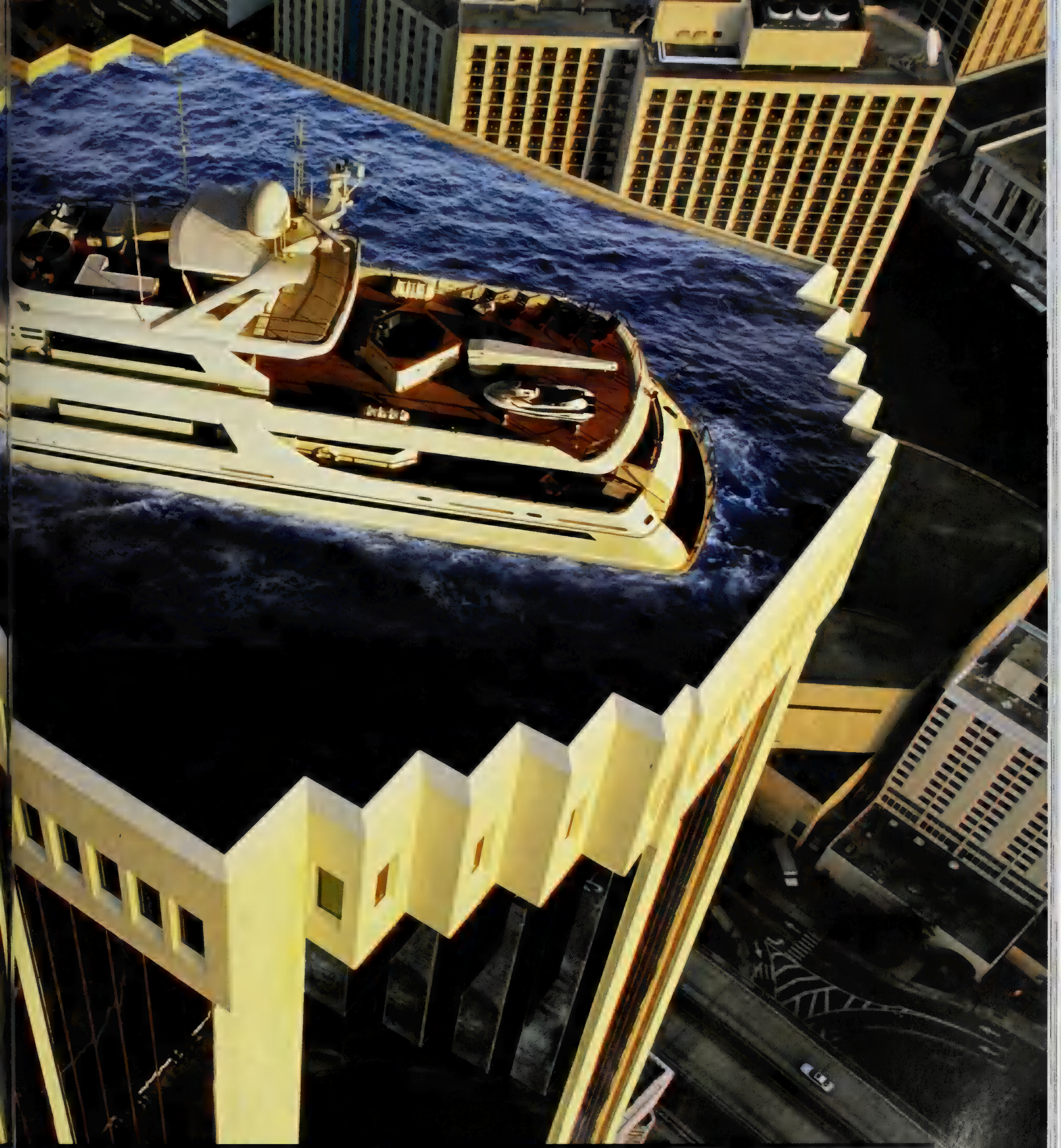

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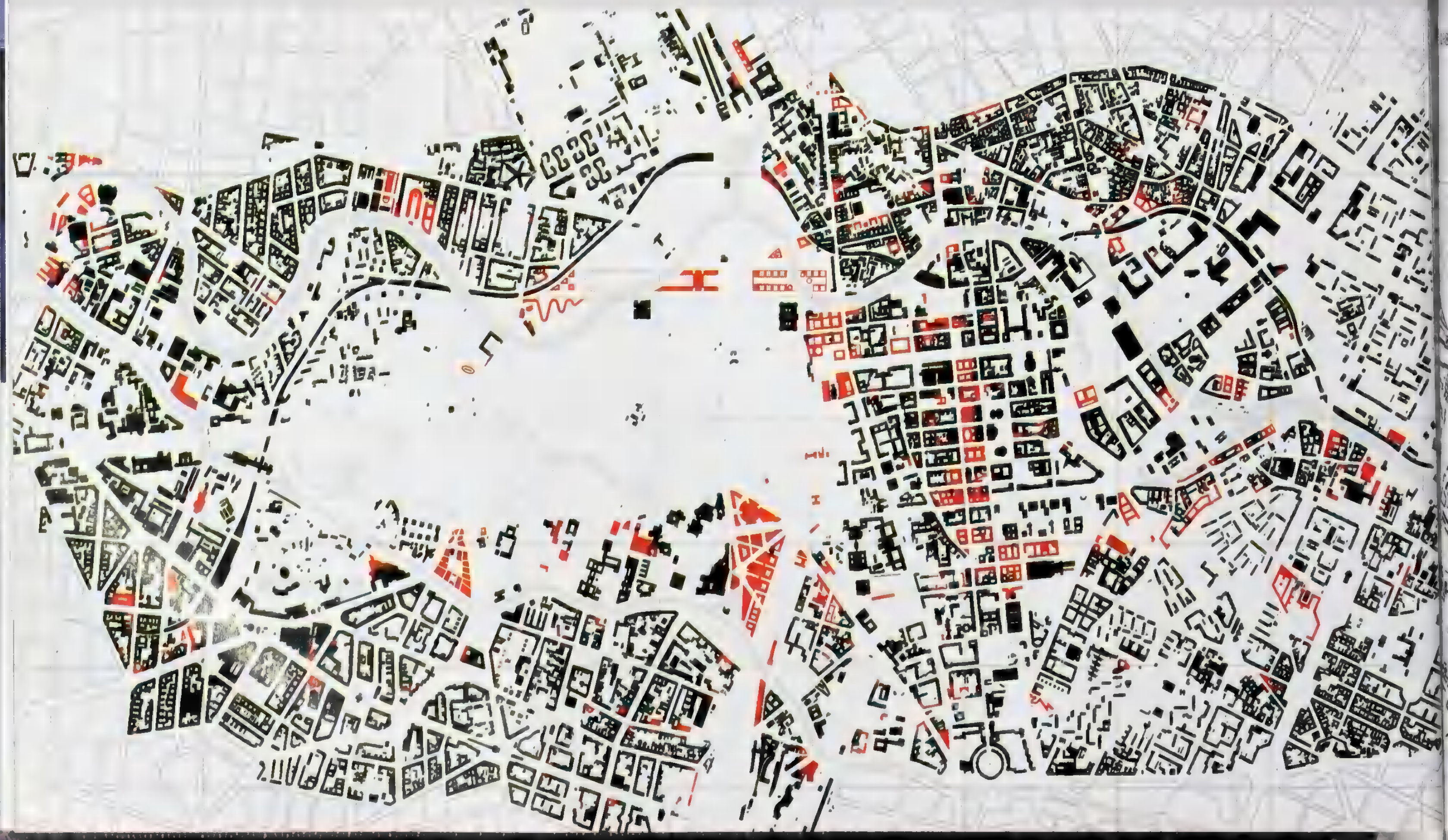
What happens when a city



All of Berlin was once like the densest blocks on this map. Only tentative reconstruction (in red) occurred in the first postwar years.

ransforms itself through architecture?

1989–2000

PHOTOGRAPHY © JOHN EDWARD LINDEN/ARCAID (OPPOSITE, TOP); WERNER HUTHMACHER (BELOW); MAPS: © BERLIN OFFICE OF URBAN DEVELOPMENT

By James S. Russell, AIA

Berlin has tantalized the world for the past 12 years. Millions cheered as the Wall was dismantled. The city was going to become the gateway to the entire former Soviet Socialist empire as it was transformed into an economic dynamo by new investment from the West. We watched a skyline of construction cranes rise over the metropolis and marveled at the awesome commitment to knitting together a city divided for 50 years. Berlin audaciously tried to reconcile its tragic past with a new vision of the urban future.

The city placed the realization of this grand ambition in the hands of architects—an opportunity unequaled since the great rebuilding projects after World War II. Important museums and public buildings were erected or rebuilt. Hundreds of miles of the rapid-transit system have been renovated and hooked back together as work proceeds on a vast new rail gateway. Countless less-glamorous projects have been undertaken, from refitting power plants to repaving sidewalks.

Lately, things have quieted down. The government is moving east from Bonn, but the economic integration of the old Communist bloc has been slow. Berlin is awash in empty commercial space, and apartments are cheap. Indeed, the city spent so freely over the past decade that it is all but bankrupt. Most of the cranes that so thrillingly carved up the sky have now been dismantled. Raphael Roth, a local real-estate developer, counsels patience. "It's taking longer than we hoped, but Berlin will be the hub for the East. The East is the future, because the West's closets are full."

Whether or not Roth is correct, a number of critics have found the architect-designed new Berlin wanting—no matter the money spent and the world-class talent involved. Berlin is just "a museum of itself," sniffed Herbert Muschamp,

Even with post-1989 construction (like the Chancellery, right, and buildings flanking the Brandenburg Gate, opposite, top), Berlin has not reached prewar densities.

The New York Times critic, in 1999. "The great undertakings of the past decade have been overwhelmingly disappointing," wrote Martin Filler last November in *The New York Review of Books*. Did architects fail Berlin? "People come to Berlin with expectations they would never apply to any other city," comments Frank Barkow, an American architect who works in Berlin with his German partner Regina Leibinger.

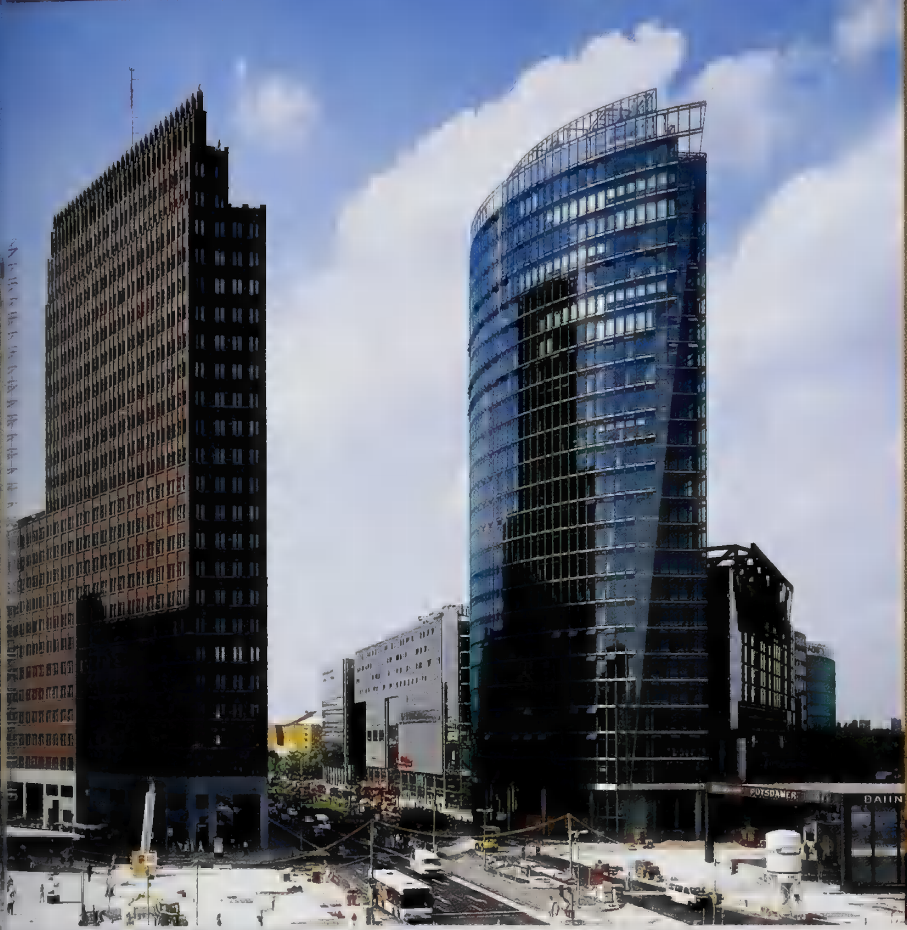
Berliners are vexed by this American disappointment. They have always seen architecture as an expression of the city's identity. Americans use architecture to aggrandize the individual, they say, pointing to the nation's neglected public realm. After the terror attacks of last September, however, Americans are looking at Berlin—and at architecture—in a new light, asking whether designers can express their grief and commemorate their losses.

Perpetrators commemorating victims

Berlin has already been there. And Berliners will tell you that experience does not make it any easier. Peter Eisenman's Holocaust Memorial has been held up by years of debate, money problems, and design alterations. Work stopped some time ago on the Topography of Terrors, the ruined site of what had been Gestapo headquarters, where cost estimates for completing Peter Zumthor's design for a museum had risen astronomically. In spite of the local debt crisis, both projects are expected to proceed soon. Debate raged so long over what and how Jewish history should be interpreted in the museum designed for it by local architect Daniel Libeskind, that it opened without displays two years ago—to instant acclaim. Its permanent exhibition opened last September [RECORD, October 2001, page 46].

Such commemorative efforts form what Michael Blumenthal calls "a conscious effort on the part of this generation of Germans to confront their nation's past and to deal with it in a constructive and open way." The Nazis drove out his family, one of the city's oldest and most prominent, when he was 12. Starting over in America, Blumenthal eventually became treasury secretary under President Carter. He returned to Berlin to oversee the Jewish Museum's installations. "It is unique and courageous for a nation to put up a monument to the victims of its own atrocities," he adds. Numerous experts told him Libeskind's design was inappropriate for exhi-

(Below from left, this page and opposite): The Chancellery from the Reichstag; Neues Museum, the only restored of the five-building Museum Island complex; '50s Socialist Modernism at Alexanderplatz; the restored Karl Marx Allee.



(Above, from left): Renzo Piano's Marlene Dietrich Platz in the Potsdamerplatz redevelopment, which features set-piece skyscrapers; elevator cores for the planned Topography of Terrors museum.

bitions. While some critics haven't changed their minds, Blumenthal says, he's become a convert to the power of architecture. "We had 350,000 paying visitors when it was empty, and with the exhibitions, it is now the most visited museum in Germany," he says. "It has surpassed my expectations."

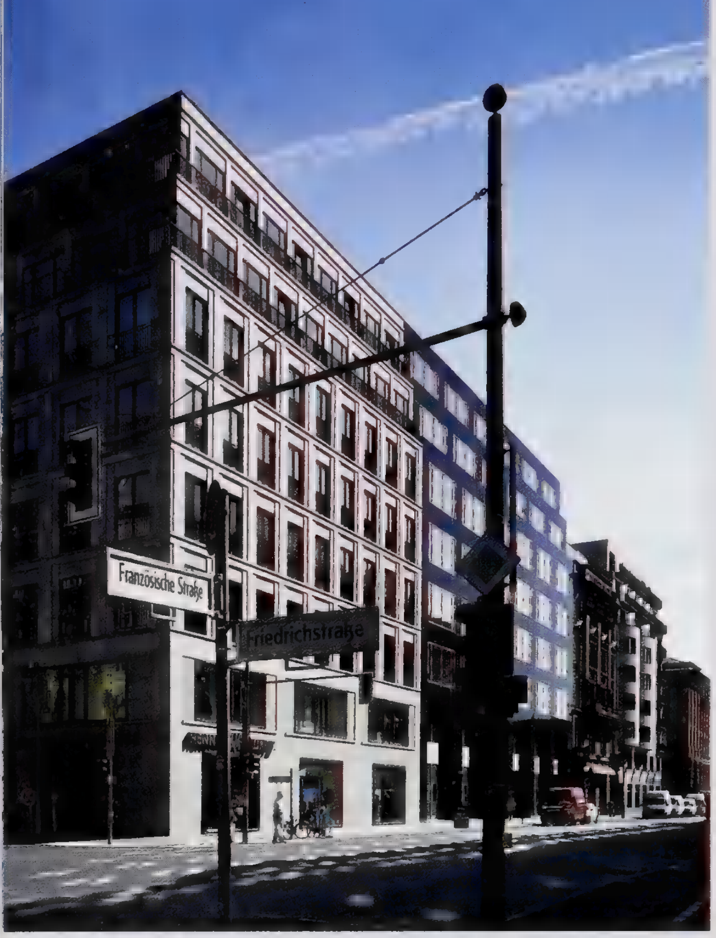
Even the sternest critics usually point to the Jewish Museum, Norman Foster's Reichstag, Frank Gehry's DG Bank, Sauerbruch Hutton's GSW Headquarters [RECORD, January 1999, page 76; July 1999, page 102; October 2001, page 120; June 2000, page 156] and a few other structures as high points in the new city's architecture—a list any city might envy.

At the same time, there is also a broad consensus that architecture has failed Berlin in a way that extends beyond the quality of individual projects. Berlin architect Axel Schultes has been an outspoken critic, even though it is his ambitious, competition-winning master plan that is being built to house the national government. "Berlin could have launched an international discourse about the city," he says. When you look for specifics, however, the compelling paradigm for the city of the next century remains undefined, inchoate—certainly not ready to be tested at the scale of a major world capital. The enticingly panoramic clean-sweep urban schemes that so preoccupied the architects of the 20th century—Chandigarh, Brasilia, Dhaka, even cold war Berlin itself (when each half of the city saw urban regeneration as a vindication of political ideology)—don't comfortably fit today's pluralistic view of the "good city."

The uses of history

Several critics have seen the "good guys"—the aesthetically innovative avant-garde formalists—as losing the architectural battle for Berlin to the "bad guys"—the contextualist conservatives [RECORD, October 1995, page 29]. But Matthias Sauerbruch, partner in the Berlin and London firm of Sauerbruch Hutton (lionized as a neglected innovator), offers a more nuanced view. "The generation of the '50s and '60s was trying to get as far away from history as possible," he says. "Now it's more about discovering history and trying to make it usable to go forward."

Berlin's urban debate is, as much as anything, a debate about the way history is used, and it is conducted largely within a paradigm framed by the late Aldo Rossi. In his *The Architecture of the City*, of 1966, he argued against Modernist idealization and its striving to perfectly fit the form to the use. He demonstrated that ancient buildings adapted to changing uses over the centuries, even becoming richer as they accumulated physical alterations and layers of meaning over time. Berlin's International Building Exhibition (IBA) of the 1980s was imbued with the Rossi ethos. It plugged holes in West Berlin's urban fabric through



historically aware small-scale insertions of new work by a roster of name-brand international architects.

The IBA approach, now dubbed "critical reconstruction," underpinned the hastily assembled citywide strategy for rebuilding. It is at the scale of execution, rather than of philosophy, that the formalists battle the contextualists. The esthetic innovators claim that officials, led by Hans Stimman, the Berlin senator in charge of urban development, have simply not been critical enough in terms of the reconstruction. Stimman's guidelines tried to restore a scale of architectural expression and a diversity of uses typical of prewar Berlin through highly prescriptive urban-design guidelines. In rebuilding the Baroque-inspired streets and squares of the once-posh Friedrichstrasse, which largely lay fallow during the divided-city era, guidelines mandated a vertical layering of retail, office, and residential uses and a horizontal diversity of facade treatments (above). "This change in paradigm," said Stimman in a speech given in New York last year, "away from the American city to the Old Urbanism of Europe, provoked a segment of the planners and builders in Berlin, the architects wedded to the freestanding object." According to Sauerbruch, the Stimman approach subsumed the architecture of the individual to the harmony of the whole. "They claimed," he says, "that architecture that doesn't follow the rules or that aspires to be exceptional only rarely achieves it. But this approach has proved a self-fulfilling prophecy in which individual buildings have come out as average and the whole now exudes mediocrity."

The new nostalgia

Berlin was not only supposed to show the way to a new vision of city-making, it was supposed to remain unique and special at the same time. Like many longtime visitors to Berlin, Columbia University architectural historian Barry Bergdoll finds the city "at once disappointing and fascinating." What bothers him is that Berlin "seems more and more just another major city." Such normalcy is essential for the city to function as an economic entity that creates wealth for its inhabitants. But Bergdoll recognizes that it's not as much fun to visit: "So much seemed exciting in '92. We enjoyed the frisson of that moment of possibility—seeing the Wall and walking through Checkpoint Charlie." You don't get that "cold war tourism" charge anymore, he says, "and we're nostalgic for that moment. That's why visitors are so obsessed with where the Wall went." (Its path today is all but undetectable.)

The most glaringly untidied place in Berlin is the asphalt-covered plain at the very center of town, presided over by the marble and copper-tinted reflective glass bulk of the partially demolished Palast der Republik. In front of it once stood the dour Stadtschloss—the Prussian imperial palace. Severely damaged in World War II, eastern-sector officials demolished the mammoth structure in 1950. For years, a well-organized coterie of citizens has campaigned for the vastly expensive reconstruction of the palace, even though no one quite knows what it would be used for.

The Schloss controversy is one of Berlin's "permanent debates," according to Daniel Libeskind, concerning, inevitably, history and memory. "There is a tradition of restoring palaces and old fabric as tourist destinations," says Mary Pepchinski, an architect and professor at the University of Dresden, citing the Romerburg in Frankfurt, a historic quarter recreated out of the ashes of wartime bombing. A government commission recently recommended rebuilding the palace exterior around a modern interior. "It's seen as safe, boring, and maybe a quick solution—a classic political compromise," says Jan Fischer, an American architect and writer who lives in Berlin. "But no one seems beholden to it." It's easy to dismiss the palace-restoration movement as kitschy Disneyfication. Don't be too dismissive, says Pepchinski. "It's about how people apply meaning to the city, what they want to live with." Blumenthal finds the Schloss debate troubling. "In trying to connect to history, how much does reconstruction remind us of the bad old days?"

Well he might ask. In the 1950s, officials carved the gigantic Stalinallee through the postwar rubble of East Berlin. The limitations on political discourse in the East presumably muted the obvious perception that this 2.5-mile stretch of palatial facades, triumphal gateways, and heroic towers evoked Albert Speer's imperial schemes for the Nazis. Later renamed Karl Marx

(continued on page 222)

In Berlin's oldest precincts, new building facades emulate old variety (above). For some observers, the glassy emblems of modern Berlin evoke a far more experimental era—the 1920s (below).

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Mr. Sergio Donadoni (Italy)
Museologist:
Mrs. Françoise Cachan (France)
Deputy Jury Members:
Dr. Fayza Haikal (Egypt)
Mr. Arne Eggebrecht (Germany)
Ms. Ana Maria Zahariade (Romania - Deputy UIA representative)
Technical Committee Coordinator:
Dr Yasser Mansour (Egypt)

Prizes

First Phase: Twenty winners will receive a prize of $10,000US each
Second Phase: First prize: $250,000US
Secondprize: $150,000US
Third prize: $100,000US

A sum of $200,000US will be distributed among Honourable Mentions based on the discretion of the jury.

Contact

The Grand Egyptian Museum
International Architecture Competition
Coordinator: Dr. Yasser Mansour
Al Remayah Square, Pyramids, Giza, Egypt
Tel: (2) 02 386 59 17
(2) 02 386 59 11
Fax: (2) 02 386 58 71
Email: gem1@idsc.net.eg
Web: www.gem.gov.eg

Registration

From 7 January to 7 April 2002. Registration may be made by mail, e-mail, web site online form, fax, or in person at the Giza address. Fees for registration are $300US + $50US for international shipping and handling, to be paid by bank transfer to the below address. Bank charges to be paid by applicants. The registration fees are non-refundable under any circumstance.

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Application

Applications for registration must arrive no later than 18:00h (+2 GMT) on 7 April 2002. Applications are to be accompanied by:

- Complete registration form with name, address, and country of origin of the architect or team of architects applying.
- Documentative evidence of the architect's or team leader's right to exercise the profession in his or her own country.
- Copy of bank receipt confirming fee payment.

Competition Brief and all related documents will be delivered during the month of April 2002 to the exact address of the registered participants. All correspondence and inquiries should be addressed to the Technical Committee Coordinator at the Giza address and/or e-mail address. Deadline for submission of the First Phase documents (two copies) shall be 12:00h (+2 GMT) 17 August 2002 at the Giza address.

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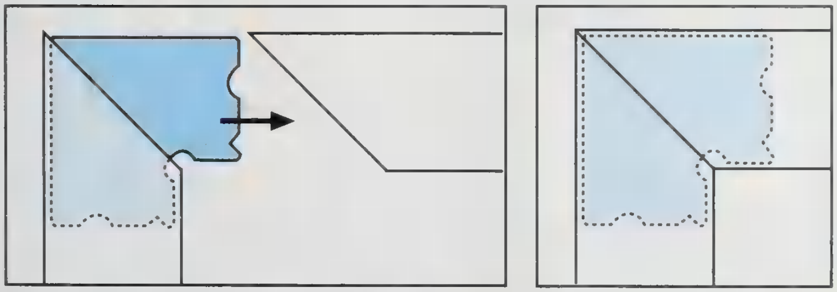

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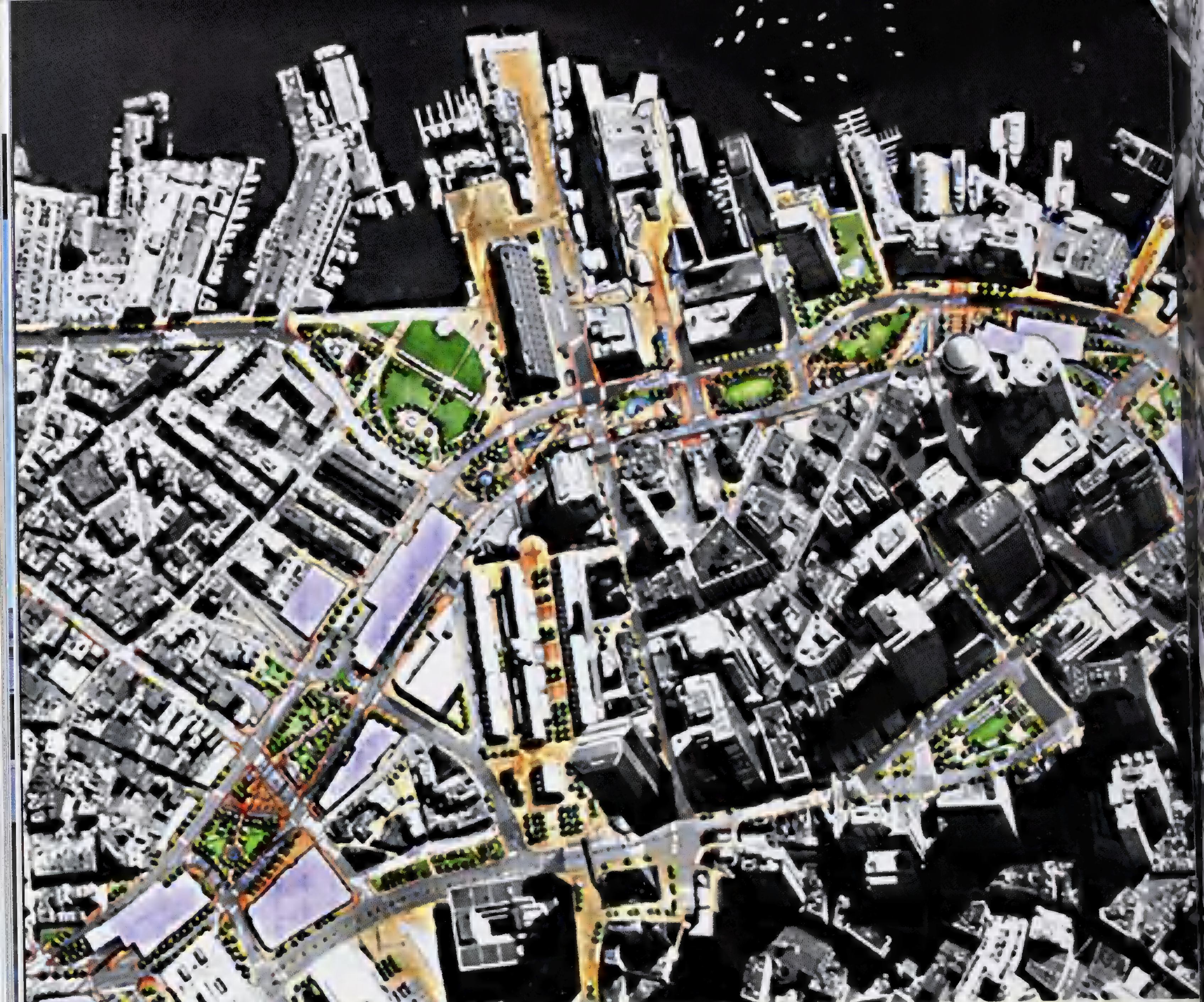


The rendering indicates the huge amount of urban space that will be recovered as Boston's Central Artery is replaced by tunnels. Photographs (right) show the Artery under construction in 1953; as it appeared when completed in 1956; and bumper to bumper, prior to demolition.

THE Big Dig

What's Up Under Boston?

By Robert Campbell, FAIA

PHOTOGRAPHY: © PETER VANDERWARKER; RENDERING COURTESY SMWM

It was back in the early 1970s that the idea first surfaced. What if we demolish the Central Artery, Boston's other Green Monster, the overhead expressway that slithers like a fat invading dragon through downtown Boston, cutting most of the city off from its waterfront? What if we put it in a tunnel underground? With the barrier of the expressway gone, we said, we'll be able to reconnect the city with its harbor in an era when waterfronts are becoming sites for recreation, rather than for shipping and industry. We'll improve traffic flow by correcting the Artery's notoriously dangerous crossing movements. We'll even be able to run a branch of the new tunnel out to the airport. We'll increase the value of the downtown real estate that now suffers from the blight of the Artery. And, anyway, we noted, the Artery is aging and rusting. From time to time a chunk of concrete falls out, landing like a meteorite from the sky.

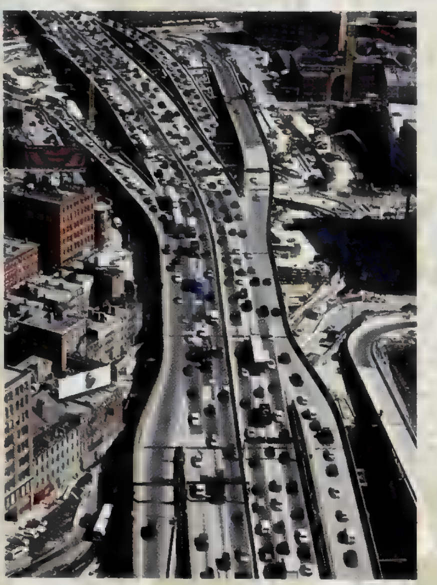
It all sounded like Utopia. But some were skeptical. The city's wisest and wittiest voice, Congressman Barney Frank (then a state legislator), suggested gloomily: "Depress the Artery? It might be cheaper to raise the city." His words sound prescient today, as cost projections climb toward the $15 billion mark. Press and politicians are quick to speak of "cost overruns."

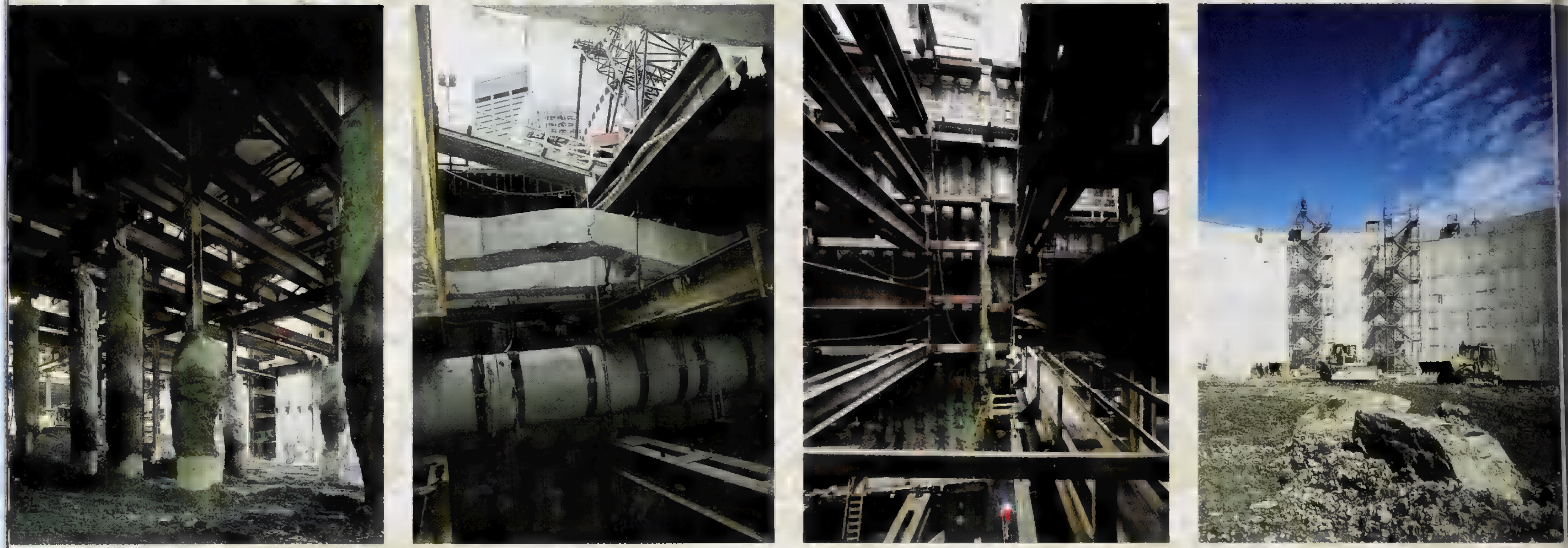
But, in fact, the Artery Project—the Big Dig, as Bostonians call it—is a bargain. In any East Asian or European city, it would attract little attention. Osaka and Hong Kong create new international airports on artificial islands in the ocean. Europe tunnels more then 20 miles beneath the English Channel. Only in the United States is it considered odd to make large public investments in the quality of urban life. Fifteen billion dollars works out to about one movie ticket per American per year over the life of the Big Dig. It's worth it. And as any architect can probably intuit, the "overruns" are fictions, because the initial estimates were fictions. It is not possible to know in advance what a project like this will cost. A feasibility study for the Big Dig would be like a feasibility study for a war. You can begin a war, but you can't know where it will end. Nobody foresaw—nobody could have foreseen—the problems that the Dig would encounter.

The Dig exists because of the political legerdemain of the late Thomas P. "Tip" O'Neill, Speaker of the House. But the concept is that of Fred Salvucci, the acknowledged godfather of the Big Dig, who was secretary of transportation under former governor and presidential candidate Michael Dukakis. (A local joke: "If you want to depress the Artery, just ask Dukakis to talk to it.") Salvucci came up with the brainstorm that the Dig would be part of the Interstate Highway System. Thus it could be largely funded by the federal government. By means of who knows what horse trades, Tip O'Neill sold that concept to Congress, which overrode a veto by President Reagan. The initial estimates were, as much as anything, Tip's canny assessment of what his colleagues would swallow. As the cost predictably ballooned, the feds grew reluctant to keep paying, and the state today picks up most of the tab. The real downside of the Big Dig is the way it's draining funds from every other state public works project.

Whatever else it is, the Dig is a thrilling adventure in engineering. You have to think of the tunnel as a kind of serpent, swimming just beneath the surface of the city. Like sea serpents, it isn't straight. There are places where it humps up to within a few inches of the surface, and there are places where it sinks more than 100 feet down. It does this because it has to slither its way among an incredible welter of subway

Robert Campbell, FAIA, is the architecture critic of The Boston Globe, *a Pulitzer Prize winner, and the bimonthly author of our Critique column.*





From the surgically precise excavation of the old structure and utility lines to the braced slurry walls built as far as 120 feet underground and the 13-foot-thick coffer dam, almost all of the work involved to complete the Big Dig has had to be accomplished at a huge scale.

PHOTOGRAPHY: © PETER VANDERWARKER

lines and underground utilities.

At one point a corner of South Station, Boston's massive old masonry train station, was temporarily propped up, so the tunnel could be shoehorned between the station above and a subway line below—while keeping all roads and rail lines fully operational and uninterrupted. Engineers couldn't make a cut here, because a cut would disrupt the rail lines. They had to bore the tunnel. But the soil, which like most of Boston is mostly fill, was found to be too soft to tunnel through. It would have collapsed into the hole, along with the railroad tracks. So the soil, acres of it, was temporarily frozen to a depth of many feet to permit the boring machines to function.

A whole series of works of architecture had to be designed simply to house the fans that would ventilate the tunnel. One of them received a National Honor Award from the AIA, and when it was found that conventional tunnel sections for the extension to the airport could not be floated beneath Boston's low bridges, the engineers created an entire 7-acre factory at the harbor's edge to manufacture steel box sections. Each weighed about the same as the Titanic, and each was floated across the water and (like the Titanic) sunk, using global positioning technology to place it with a margin of error of less than half an inch.

Through it all, the old overhead Central Artery, with all its ramps, continued to function. It will not be torn down until the eight-lane tunnel beneath it is complete. Traffic of all kinds—Amtrak, commuter trains, subways, cars, and trucks—continues to flow with remarkably little inconvenience. The coordinating engineers, Bechtel/Parsons Brinkerhoff, solved problem after problem—employing technology that had been developed and proved, more often than not, in Europe. They also, predictably, made some blunders. Water leaked into one of the tunnels. Less forgivably, part of a bridge had to be rebuilt when it was discovered that reinforcing rods were spaced too close together, so the concrete couldn't be forced in to bond with them.

The bridge in question—the Leonard P. Zakim Bunker Hill Bridge, a name that sounds like the political compromise it is—occurs where the Big Dig tunnel emerges from the ground and crosses the Charles River into Cambridge. Already, the bridge—not yet open to traffic—is a Boston landmark, dramatically lit in blue at night. It is a cable-stayed construction designed by Swiss engineer Christian Menn. It is unique among such bridges, so far as I know, in that it is asymmetrical. To solve the intricate traffic movements, two of its lanes are cantilevered out to one side. This oddity gives the bridge an engagingly lopsided informality. Not so engaging is the dumb detail at the top of each of the supporting concrete towers. They are arbitrarily sculpted into pyramids so as to rhyme, visually, with the Bunker Hill Monument nearby. It's a needless gesture that spoils the rigorous beauty of the engineering.

Visiting the Big Dig at its most spectacular, about two years ago, was very much like walking into the interior of a Piranesi engraving of a madhouse or prison. Many people commented on the resemblance. In the deeper places, where the tunnel was cut rather than bored, you'd stand at the bottom between two slurry walls and look upward as much as 120 feet, through tier upon tier of steel and concrete, with the light trickling down as if from another planet.

OK, flash forward to the present. The end of the Big Dig is at last in sight. Now everyone's attention is on another issue: What to do with the new long, winding corridor of space that currently lies in the shadow of the overhead Artery, but which will emerge when the Artery comes down? This is today the most hotly argued design question in Boston. In a small way, it's like what happened when the fortifications of Vienna and similar cities were torn down. What do you do with the new space?

Predictable forces are aligned. The Greenspace Alliance, a powerful group in Boston, believes that as much of the surface as possible should be green parkland, air and grass and shrubs and trees, a "lung for the city," in Olmsted's term. The Artery Business Committee, representing owners and other business interests in the area, would like to see cultural uses introduced to activate the space, perhaps with outdoor cafés and the like. Architects, in general, tend to think metaphorically of sewing the city back together over this gash, rather than memorializing it by means of an uninterrupted linear park. (However, nothing exceeding a few stories can be economically built, since the tunnel isn't structured to bear anything higher.) The Horticultural Society

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would like to build a glazed winter garden, but it may not have the money to do so. The North End neighborhood at one end and the Chinese community at the other have their own agendas. The state legislature, in a virtually secret move, determined that the land will be called "The Rose Kennedy Greenway," honoring the matriarch of the Kennedy clan while undermining those who object to an all-green surface. These are only a few of the many groups and voices that have entered the debate. Some of the abutting owners have hired their own urban design consultants.

The Massachusetts Turnpike Authority controls the land, and last year it commissioned a $1 million study, led by Karen Alshuler of SMWM in San Francisco. The goal was to create a master plan—really a set of visual guidelines—under which landscape architects, yet to be selected, would develop designs for the various parcels. The Alshuler study operated within—and chose not to challenge—a set of rigid parcel-by-parcel constraints laid down more than a decade ago by the environmental permit (subsequently embodied in a special zoning law) that allowed the Big Dig to occur. These require that 75 percent of the land be "public open space," and in many cases they virtually dictate what can happen on each parcel. The authors of the study talked to everyone, in the vain hope of discovering consensus. As a result, they created a shallow, least-common-denominator document that lacks vision and invention and failed to ignite any enthusiasm. Many of the parcels are proposed to be simply grass plots with artfully angled paths.

Meanwhile, the state government, despite lengthy meetings and discussions, has failed to decide who will be responsible for managing and maintaining the land in the future. Presumably the city government will play some role in that, but nobody knows what.

It's a typical Boston brouhaha. Whatever happens, we can now be sure that the Big Dig will indeed get finished, at whatever financial cost. We can be sure, too, that Boston will be a better place for it. What is less certain is whether we will ever get beyond that, to seize the opportunity of a century to create a great and memorable example of city-making. ■

Steel tunnels that were submerged under the bay had to be built in Baltimore and moved to Boston on barges. Each tube is wide enough to carry two lanes of traffic. The cable-stayed bridge spans the Charles River, connecting Cambridge with the tunnel.

What happens when freeways come down

Besides Boston, eight other U.S. cities have started or completed freeway redevelopment projects: Cincinnati; Duluth; Fort Worth; Hartford; Pittsburgh; Portland, Oregon; San Francisco; and Seattle. Several more projects should start shortly: Milwaukee, Portland (again), and San Francisco (again). Such projects mean considerable professional opportunities—and large fees—for architects and planners.

Three forces are driving this emerging trend. First, many downtown freeways are obsolete due to overcrowding, lack of maintenance, and decades of heavy use. Second, money is available from federal, state, and local sources. Third, although freeway redevelopment projects are never cheap, they can reap tremendous financial returns and quality-of-life improvements.

Freeway redevelopment projects take three forms.

Removal: The best-known example is San Francisco's late but not lamented elevated Embarcadero Freeway. San Francisco will also remove its equivalent of Boston's Central Artery near the Civic Center.

When outright removal is not a realistic option, cities can turn to two other strategies.

Relocation: Fort Worth is demolishing the downtown stretch of I-30. A replacement section I-30 was built a quarter of a mile to the south, well outside the downtown core.

Retrofit: Freeways that cannot be removed or relocated can still be retrofitted with new features such as Pittsburgh's 100-foot-wide, 4,000-foot-long Allegheny Riverfront Park, built beside and atop the Fort Duquesne Boulevard highway.

Of course, freeway redevelopments face potential roadblocks. They are incredibly expensive and prone to cost overruns and mismanagement. In addition, most government officials—and many architects—have not recognized this trend, or the opportunities it offers our cities, so design issues are not being debated, plans are not being made, and specific freeway redevelopment programs are not being formulated.

The obsolescence of scores of ill-located 1950s and 1960s downtown freeways is an extraordinary opportunity to repair the damage they have wreaked upon American cities. But, if freeways are rebuilt where they stand, this nascent trend could become the opportunity that got away. *Charles Lockwood*

Charles Lockwood has written many books on U.S. architecture and cities.

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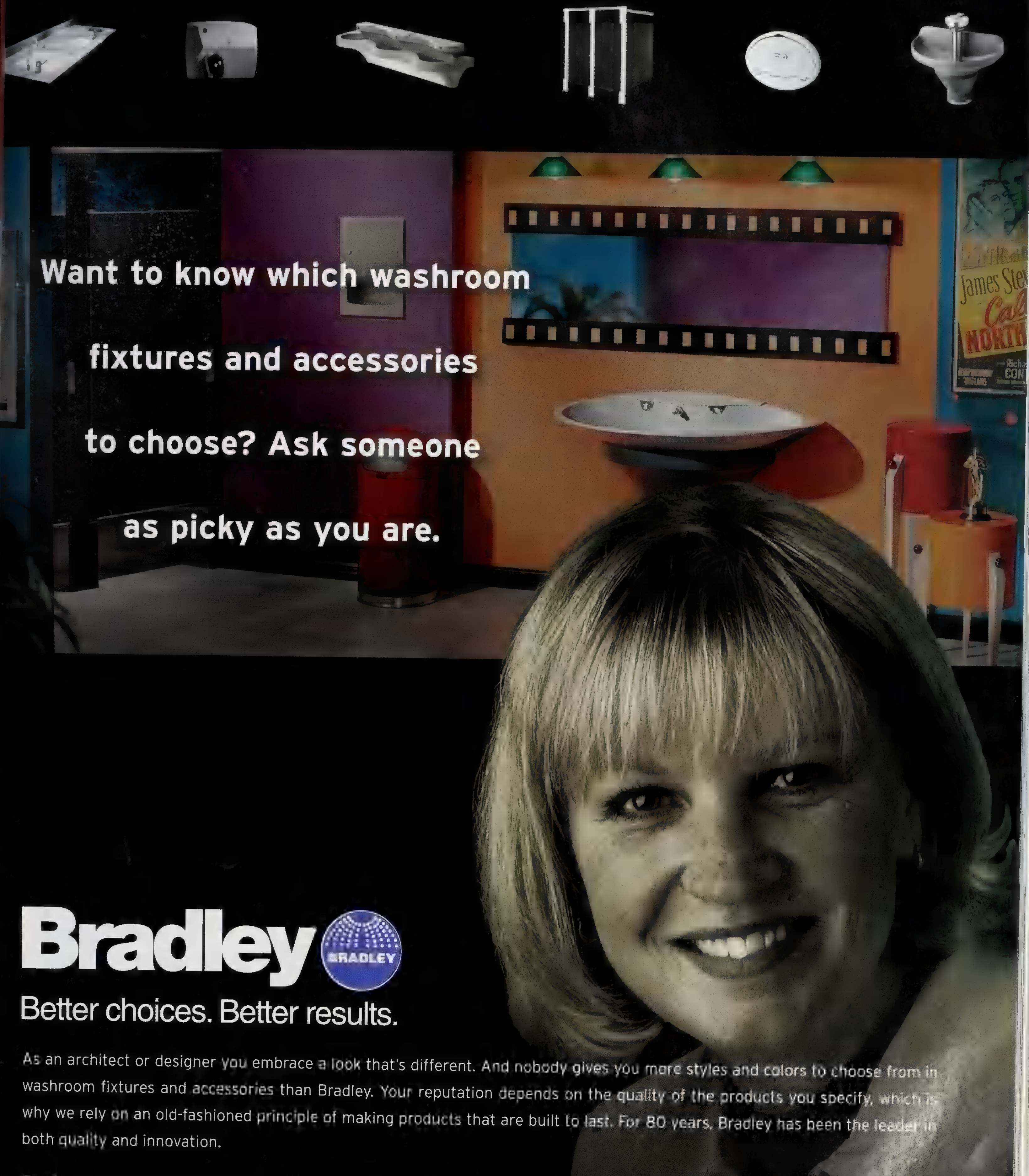

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Cables, strung from a mast that acts as a counterbalance to the pedestrian bridge, are a lyrical contrast to the closed brise-soleil.

Santiago **Calatrava** marries sculpture and structure, and molds a new identity for the **MILWAUKEE ART MUSEUM**, his first building in the United States

By Blair Kamin

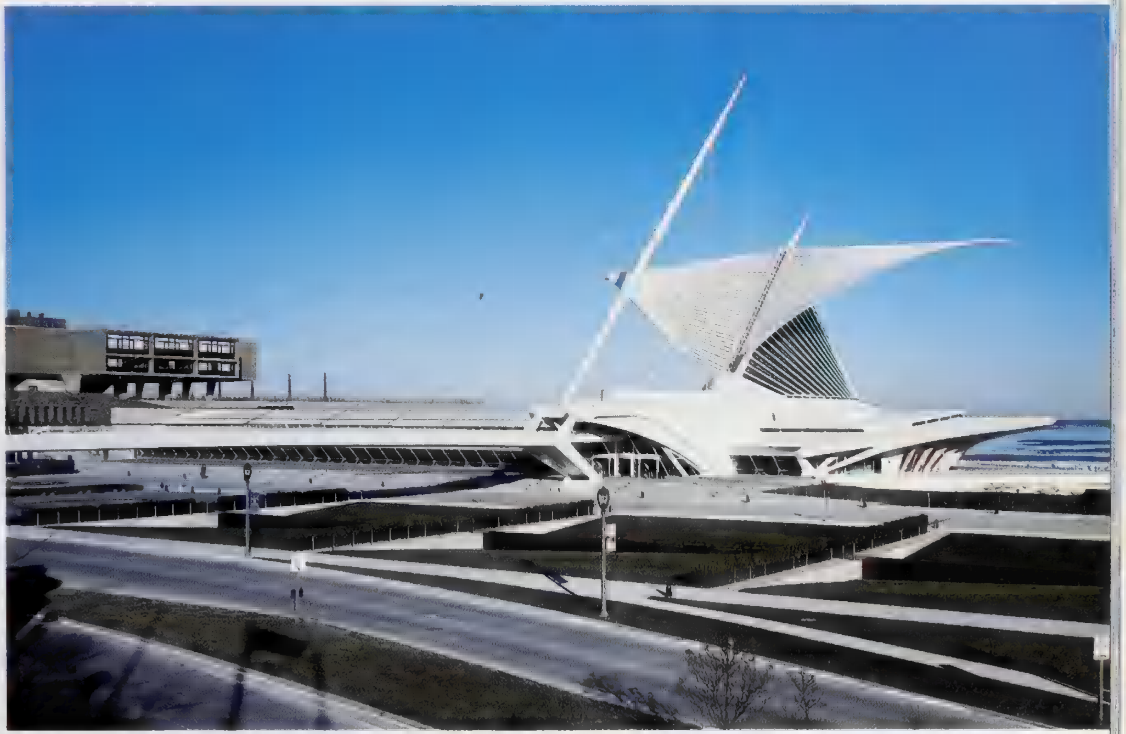
Unlike Las Vegas high rollers, art museum directors don't walk around with suitcases full of cash and dice spilling on green felt crap tables. But maybe they should, considering the gambler's mentality it takes to build a great museum today. Anyone wanting to repeat the much-hyped "Bilbao effect" must forge a partnership with an architectural superstar, raise millions of dollars, then hope that the finished product turns out to be a media megastory that draws critical raves as well as hordes of visitors.

For better or for worse, this is the way the global museum game is played at the beginning of the 21st century, and it certainly describes the high-wire act that the Milwaukee Art Museum has performed with its $75 million Quadracci Pavilion addition designed by Zurich-based, Spanish-born architect and engineer Santiago Calatrava, with Milwaukee firm Kahler Slater as architect of record. Not only is this Calatrava's first building in the United States and his first museum, but it also represents his most extensive essay in kinetic architecture, sporting a 217-foot-wide brise-soleil, set atop the museum's glass-sheathed reception area, that opens like the wings of a giant bird.

Before the museum opened last October, questions abounded about the feasibility and appropriateness of the daring contraption. A tropical sunshade in frigid Milwaukee? There were concerns, too, about Calatrava: How could he relate his stark white, gravity-defying, steel-and-concrete Modernism to the Midwestern Rust Belt city of Milwaukee?

Today, though, it is clear that Milwaukee's gamble has paid off in the form of a striking monument that is at once a strong personal statement and a sensitive essay in the making of place. While visitors may flock to the addition to glimpse the birdlike brise-soleil, they are likely to come away realizing that the device is not an isolated gimmick, but simply the most visible part of an inspired, carefully conceived whole. What makes the building fly is Calatrava's singular fusion of sculpture and structure.

Structure has been off the architectural radar screen for nearly a quarter of a century, ever since the Postmodern assault on the formulaic

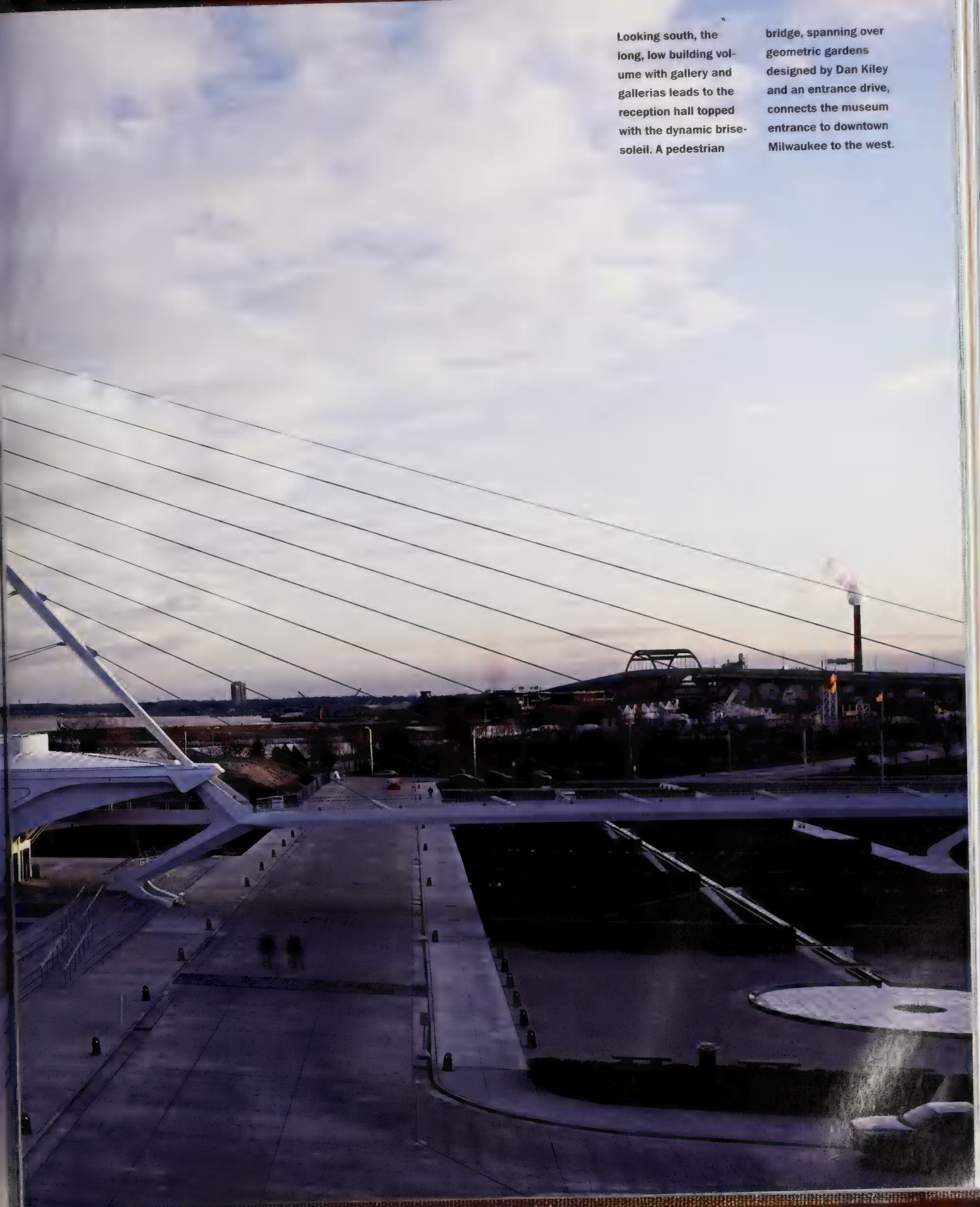


PHOTOGRAPHY: © ALAN KARCHMER/ESTO

Pulitzer Prize winner Blair Kamin, a contributing editor to ARCHITECTURAL RECORD, *is the architecture critic for the* Chicago Tribune. *A collection of his essays,* Why Architecture Matters: Lessons from Chicago, *was published in 2001.*

Project: *Milwaukee Art Museum expansion*
Architect: *Calatrava Valls—Santiago Calatrava, principal*
Architect of record: *Kahler Slater—David Kahler, FAIA, principal in charge; Lou Stippich, AIA, project manager; Erv Schloemer, AIA, senior project architect; Roger Retzlaff, AIA, project architect*
Structural and civil engineers: *Graef Anhalt Schloemer & Associates*
Mechanical and electrical engineers: *Ring & DuChateau*
General contractor: *C.G. Schmidt*
Brise-soleil mechanical equipment designer: *Neenah Engineering*
Landscape: *Office of Dan Kiley*

Looking south, the long, low building volume with gallery and gallerias leads to the reception hall topped with the dynamic brise-soleil. A pedestrian bridge, spanning over geometric gardens designed by Dan Kiley and an entrance drive, connects the museum entrance to downtown Milwaukee to the west.

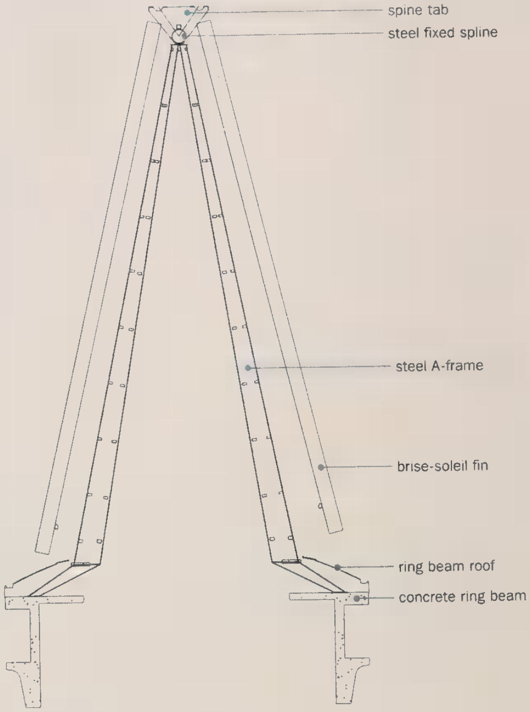


A sunshade unlike any other

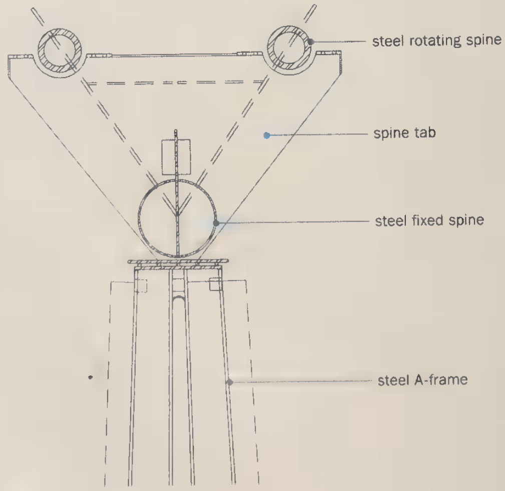
The primary elements of the Burke Brise-Soleil (named after donors John and Murph Burke, who gave $1.5 million for the project) are the 72 fins, which range in length from 26 to 105 feet. Ingemetal, a metal manufacturer in Zaragoza, Spain, coordinated the fabrication of the fins, which were shipped to Milwaukee in Russian cargo planes.

Constructed of steel plate ranging in thickness from 3/16 inch to 3/8 inch, each fin has a twin-plate fin tab welded to its end. Sets of twin plates on the spines accept the fin tab plates and enable the fins to be bolted to rotating spines.

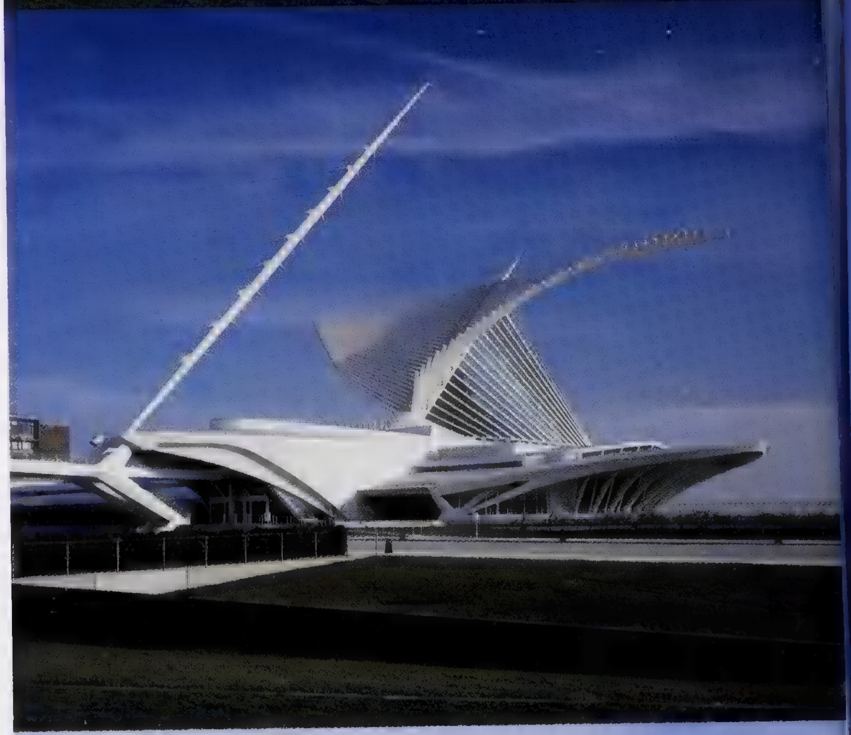
The rotating spines are supported on spine tabs and at their base. At the spine tabs, the rotating spines are cradled in bearings that transfer weight load and facilitate spine rotation. The spines are supported at their bases through flat bearings on the concrete structure. *John E. Czarnecki, Assoc. AIA*



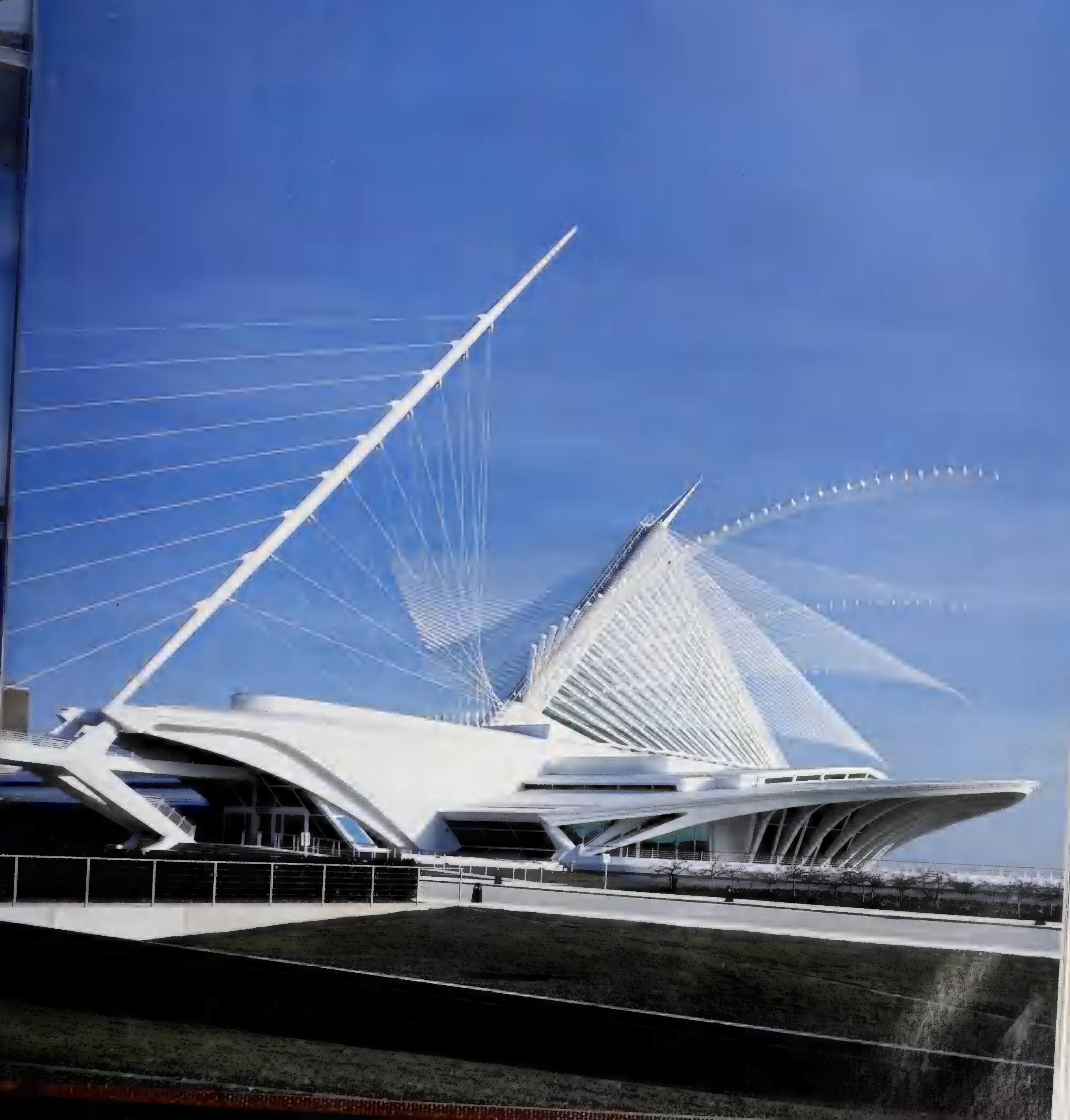
SKYLIGHT/BRISE-SOLEIL SECTION

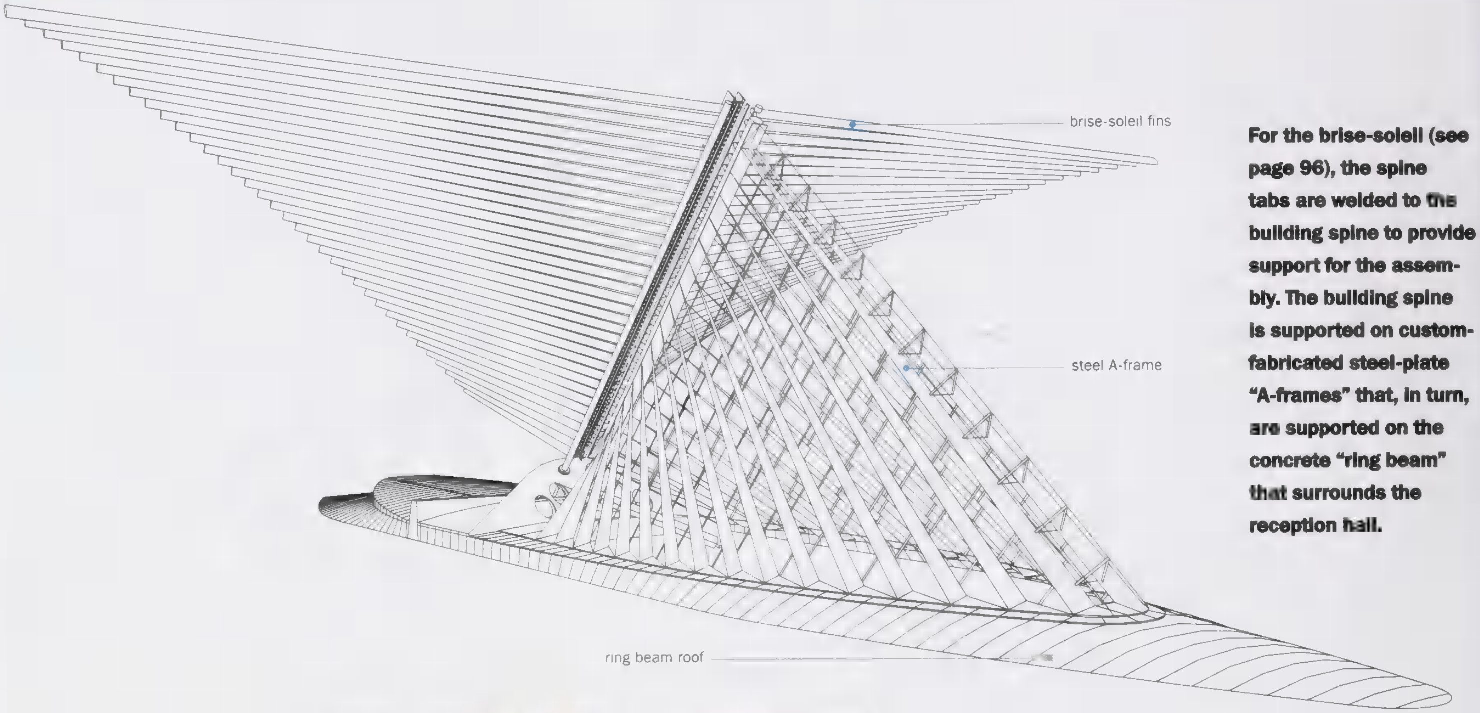


BRISE-SOLEIL SPINE DETAIL

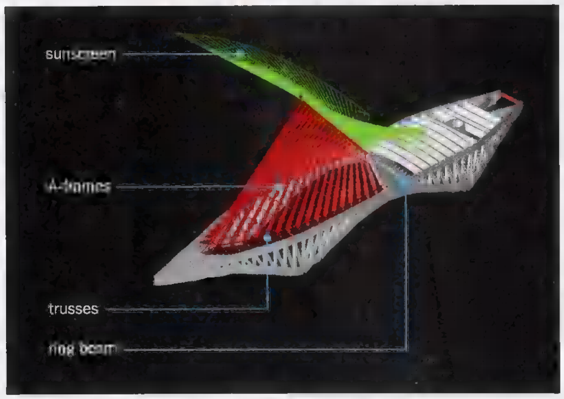


The brise-soleil takes about four minutes to open and close, and it will close automatically if sensors detect wind speeds exceeding 23.6 miles an hour. A system of 22 hydraulic cylinders, 11 for each side, raise and lower the 72 steel fins, which weigh 110 tons in total. The brise-soleil was initially designed for carbon fiber fins that would have been too costly and taken much more time to construct.

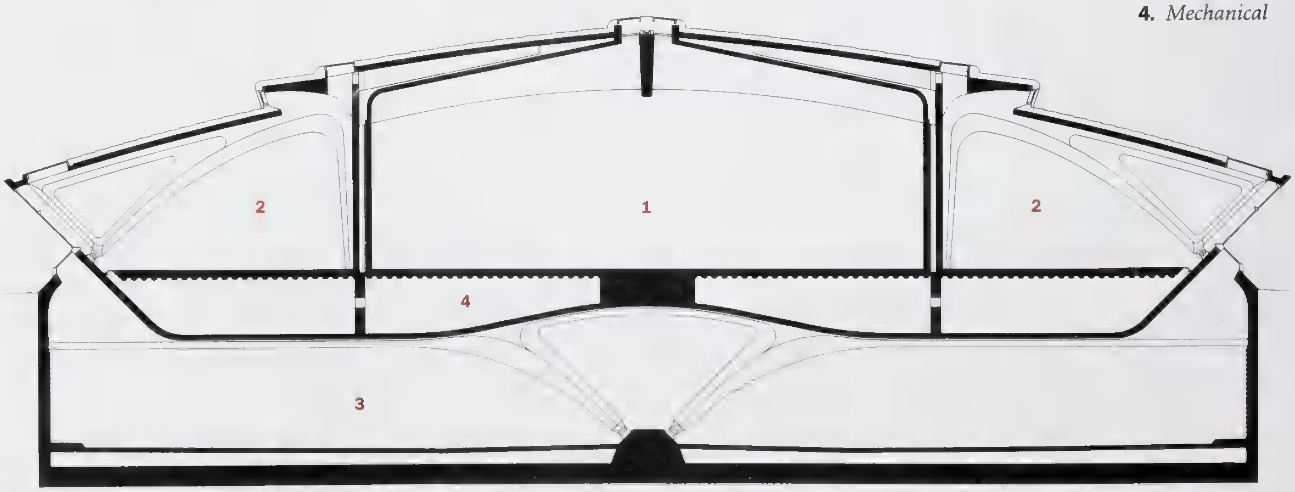




For the brise-soleil (see page 96), the spine tabs are welded to the building spine to provide support for the assembly. The building spine is supported on custom-fabricated steel-plate "A-frames" that, in turn, are supported on the concrete "ring beam" that surrounds the reception hall.

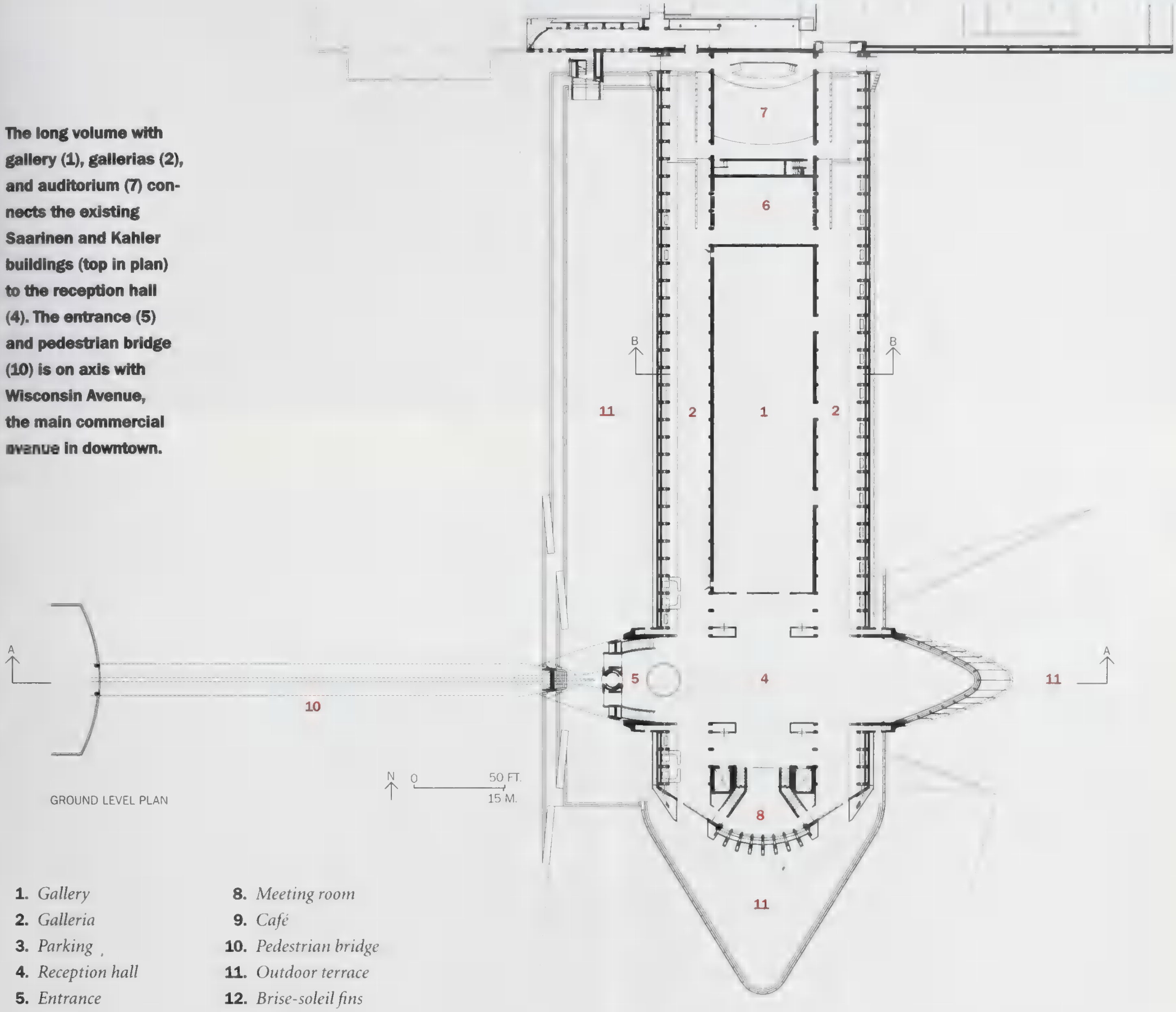


1. *Gallery*
2. *Galleria*
3. *Parking*
4. *Mechanical*



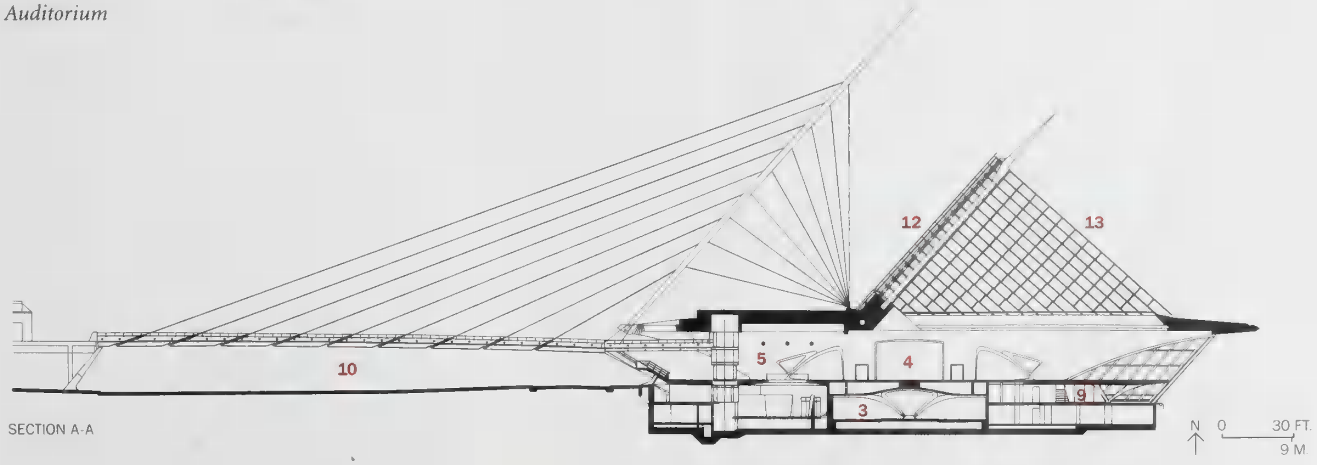
SECTION B-B THROUGH GALLERY

The long volume with gallery (1), gallerias (2), and auditorium (7) connects the existing Saarinen and Kahler buildings (top in plan) to the reception hall (4). The entrance (5) and pedestrian bridge (10) is on axis with Wisconsin Avenue, the main commercial avenue in downtown.



GROUND LEVEL PLAN

1. *Gallery*
2. *Galleria*
3. *Parking*
4. *Reception hall*
5. *Entrance*
6. *Gift shop*
7. *Auditorium*
8. *Meeting room*
9. *Café*
10. *Pedestrian bridge*
11. *Outdoor terrace*
12. *Brise-soleil fins*
13. *Skylight*



SECTION A-A

Modernist buildings of the 1970s. But Calatrava is at pains to reveal a building's bones, making them the centerpiece of his baroque visual drama. Although his Milwaukee addition is not without faults, it nevertheless has real significance because it reasserts and refreshes the age-old premise that architecture is a building art.

To fully grasp the importance of Calatrava's design, one must understand its spectacular site, just to the east of downtown Milwaukee on the shores of Lake Michigan. In 1957, Milwaukee's civic leaders imported to this setting an earlier star, Eero Saarinen, to design a multipurpose Modernist structure that would house a war memorial above and an art museum below. Saarinen's solution, a cruciform concrete mass soaring above a heavy, stone-clad base, nobly commanded its environs, but it had limited room for galleries and made the museum visually subservient to the war memorial. The space crunch was temporarily alleviated in 1975, with the museum's first addition, a low-slung Brutalist structure by Milwaukee architect David Kahler that was wedged between the war memorial and the lake. But this appropriately modest, if unremarkable, building left the museum without a strong formal identity.

Calatrava, who won the Milwaukee commission in 1994, besting finalists Arata Isozaki and Fumihiko Maki, set out to correct that problem in a composition that grew substantially in cost and scope after it was unveiled in 1996. That shift occurred because Calatrava's design (and his charm on the fund-raising circuit) opened wallets. The budget shot from $35 million to $75 million to include higher-than-expected construction costs and major additions, such as the brise-soleil, a 100-space underground parking garage, and gardens by landscape architect Dan Kiley.

Three distinct elements in a powerful whole

In its finished state, the addition conveys the impression of a powerful whole even though it is made up of three distinct elements: a low-slung gallery building that extends southward from the Saarinen and Kahler wings; a 250-foot-long, cable-stayed pedestrian bridge that links the museum to downtown Milwaukee; and the brise-soleil, which sits atop a steel-framed reception hall and consists of 72 paired steel fins. Driven by hydraulic motors, the fins ostensibly are there to control the temperature and light in the reception hall, but they also give the museum a landmark presence it never had underneath the war memorial.

While reaction has been favorable, some critics have observed that, by separating the grand reception hall from the more modest gallery building, Calatrava has dodged the conflict between the container and the contained that must be resolved if a building is to rank as a great art museum. Indeed, Calatrava's addition has very little art in it. Just 12,000 of its 142,000 square feet are devoted to gallery space, with the rest going to public spaces like the reception hall. But Calatrava's task was less to resolve the ongoing battle between art and architecture than to recast the entire museum's inner workings and identity. He did the former by shifting the public spaces out of Kahler's wing and allowing the space they occupied to become galleries, thus giving the museum 30 percent more art-display space. He did the latter by creating a grand civic space and a new image for both the museum and its city.

Take, for example, his deft handling of the spectacular shoreline site. He keeps the gallery building low to preserve views of Lake Michigan from the city. Throughout, he abstracts nautical imagery (sails, planks, prows, masts, soaring birds) to link the museum to the lake. While the blazing whiteness of the building appears to set it apart from Milwaukee's somber vernacular, the color actually makes the block-long structure seem smaller than it would have otherwise and further links the building to its lakefront site by echoing the colors of sails.

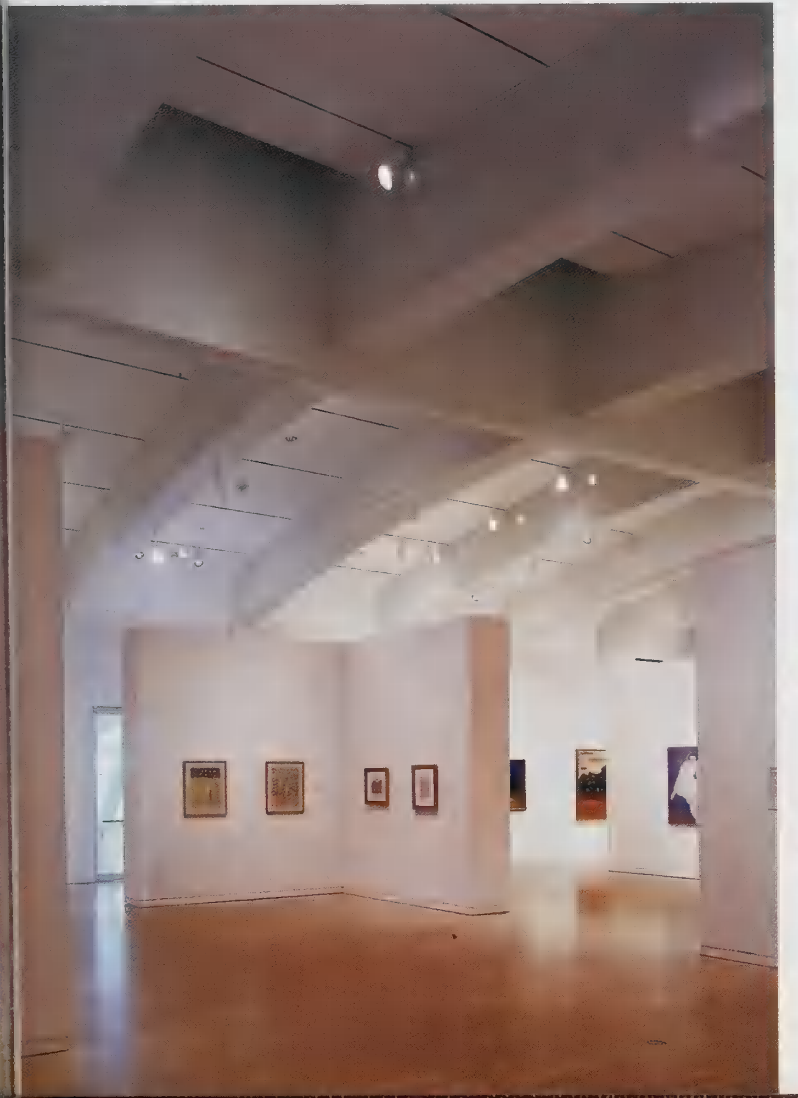
CALATRAVA'S TASK WAS TO RECAST THE MUSEUM'S INNER WORKINGS AND IDENTITY.

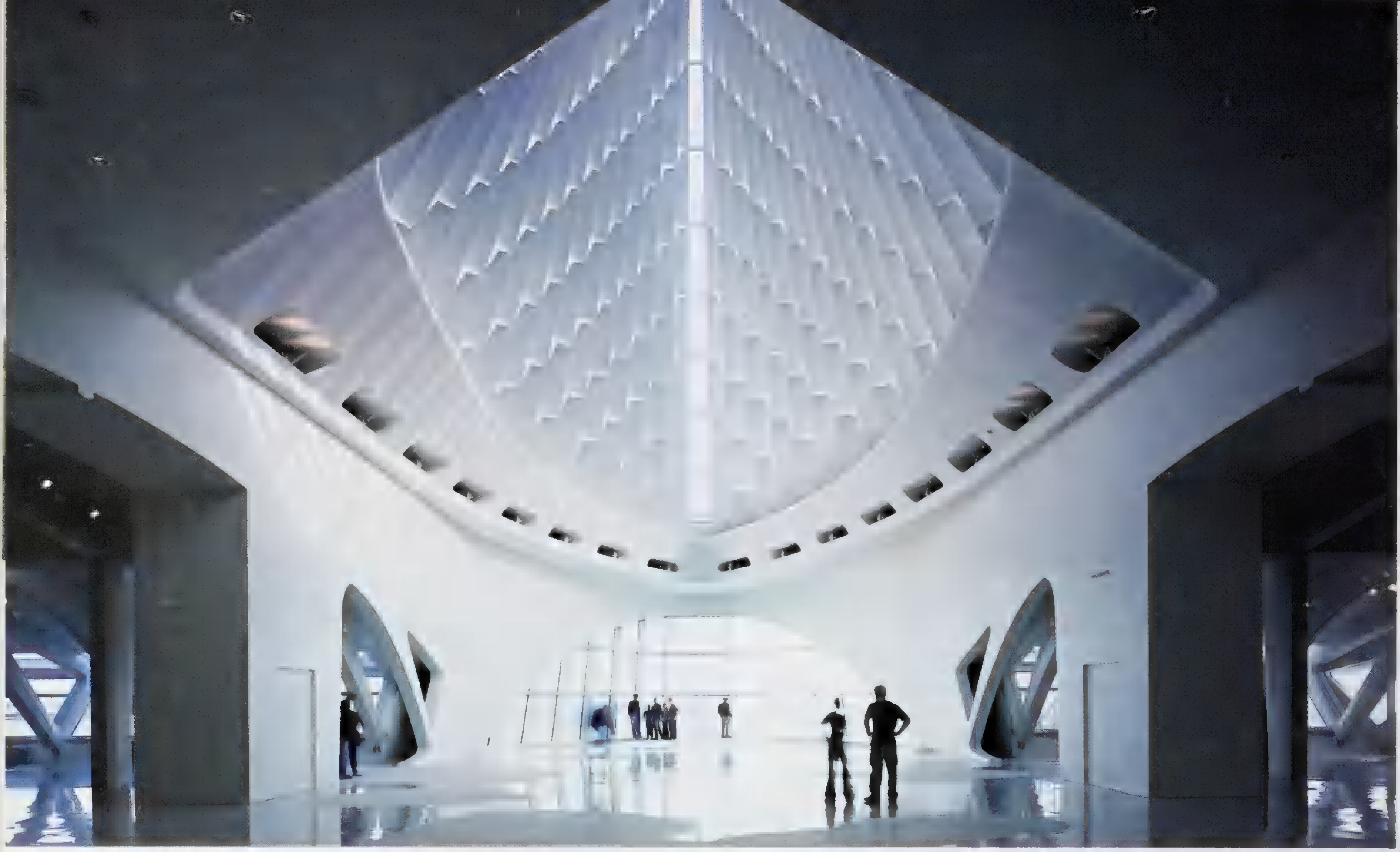
Calatrava is equally good at relating his addition to both the city and to Saarinen's war memorial. The sculptural presence of the brise-soleil culminates the axis of Wisconsin Avenue. Meanwhile, the addition echoes Saarinen's cross-shaped plan, while Calatrava's building opens up a genuine dialogue with Saarinen's: the earlier structure, heavy and gray; the newer one, light and white—one trying to float but still earthbound; the other truly soaring—one static, the other dynamic.

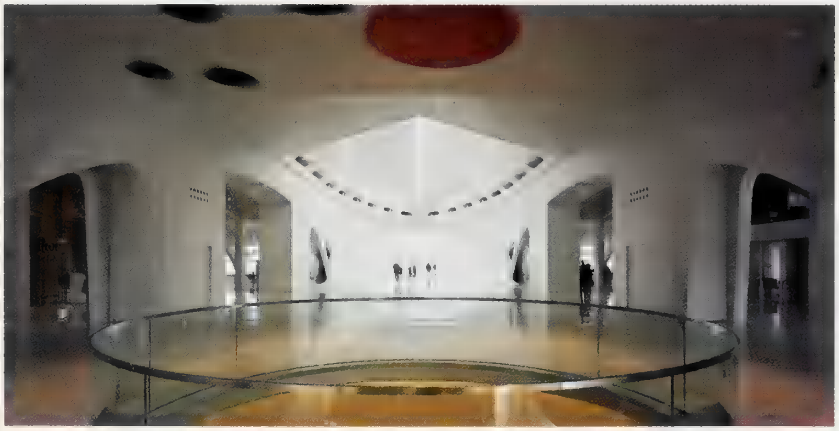
When the brise-soleil unfolds, it is an event, one that beckons museumgoers outside with their video cameras. As the fins move upward, the sunshade resembles the bottom of an hourglass. Then, as the fins reach their apex and transform themselves into softly curving arcs, the resemblance to a bird becomes unmistakable. This is not spectacle, but art, a stunning and skillful transformation of heavyweight steel into a kinetic sculpture that seems as light as a bird's wings.

Calatrava has designed moving buildings before, like his

Curving concrete arches near the entrance (opposite, left), when repeated create a beautiful rhythm in the gallerias (opposite, right), which have skylights between the arches (above). For the gift shop, Calatrava designed the showcase tables (right). Ascending the stairs (below, right) from the parking garage allows a glimpse of the reception hall. The main gallery (below, left) is flexible.







From the front entrance, visitors see the reception hall ahead (above). The underground parking garage (right), with painted white walls, ceiling, and curving concrete arches springing from the floor, is as poetic as the public spaces above.

sphere-shaped City of Science in Valencia, Spain, which has a cantilevered glass and concrete canopy that drops down over the facade like an eyelid over an eye. Yet the Milwaukee addition represents his most extensive effort in an aesthetic where buildings move or seem to move. Why do it here? Simple: The Milwaukee museum desperately needed to make a powerful visual statement, and Calatrava gave it one with modern machinery that can instantly transform the building's appearance.

As the rest of the exterior demonstrates, Calatrava is a master of this kinetic genre. His cable-stayed bridge in Milwaukee is a structural tour de force; its wafer-thin steel deck makes it seem to float. There are other memorable flourishes, like the gallery building, which culminates, on the addition's south side, in a beautifully sculpted prow that recalls the extended fingers of a human hand.

Calatrava speaks of his design as a series of gestures, which seems appropriate because the building, like a sculpture, resembles a body moving through space. Yet befitting its role as architecture, the addition shapes space, as when the gallery building frames the stone forecourt to the west of the addition and, to its west, Kiley's gardens. Their low-slung hedges aptly echo the horizontality of Calatrava's

(continued on page 224)

Sources

Metal/glass curtain wall/skylights: *Super Sky Products*

Metal roofing: *Overly Manufacturing*

Glass: *Viracon; Cricursa*

Entrance and interior glass doors: *Ellison Bronze; Blumcraft; ACI*

Boardroom furniture: *Keilhauer; Davis*

Interior ambient lighting: *Bega; BK; Edison Price; Elliptipar; Evenlite; Hydrell; Kirlin; Kurt Versen; LSI; Prescolite*

Controls: *Lutron*

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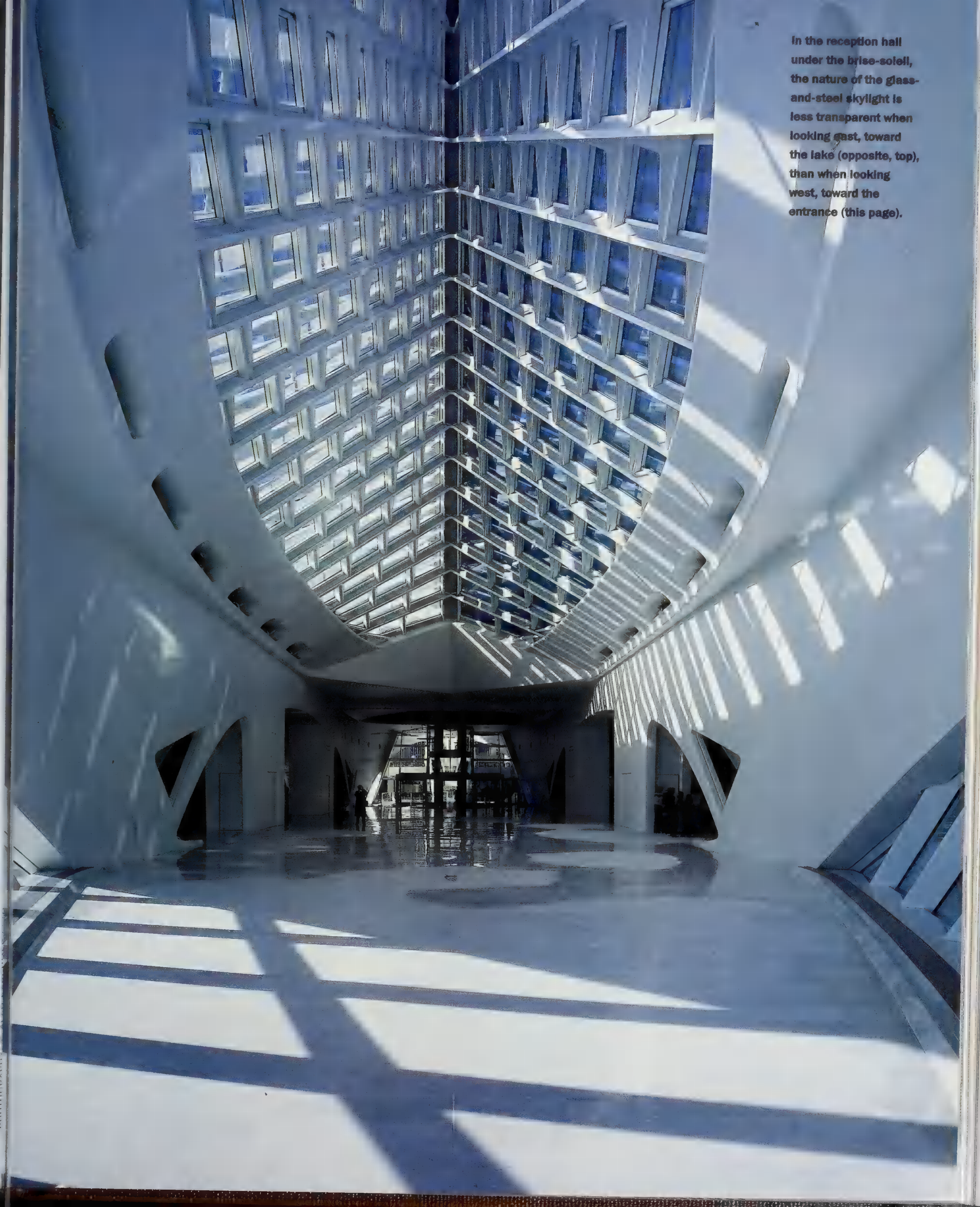
PHOTOGRAPHY: © ALAN KARCHMER/ESTO



In the reception hall under the brise-soleil, the nature of the glass-and-steel skylight is less transparent when looking east, toward the lake (opposite, top), than when looking west, toward the entrance (this page).

A symbol for the city, the Milwaukee Art Museum addition demonstrates the power of architecture

What can one building do for a city? Can it uplift a city or alter perceptions of it? Milwaukeeans think so. Now that the Santiago Calatrava addition to the Milwaukee Art Museum (MAM) has opened, the building is being critiqued and analyzed not only as a museum and as a sculptural edifice, but also for its lasting impact on this midsize Midwestern town.

Calatrava's first building completed in the United States is in, of all places, the 19th largest city in the country, with a population of about 597,000 people. For Milwaukee, known as the home of Miller Brewing and Harley-Davidson, the Calatrava building is a new visible symbol. Whether Milwaukeeans want to admit it or not, in our media-driven society the Calatrava addition to MAM now *is* Milwaukee to the rest of the country and the world.

"We've had this beer, brats, and *Laverne and Shirley* image for a long time, and we've had a hell of a time shaking it, frankly," says Donald Baumgartner, president of the MAM board. "I think this art museum has put us in a new league."

"It challenges those preconceptions," added Robert Greenstreet, dean of the University of Wisconsin-Milwaukee School of Architecture and Urban Planning, chair of the city planning commission, and a member of the 21-person architect-selection committee that chose Calatrava over Arata Isozaki and Fumihiko Maki for the MAM job in 1994. "I'm very positive about the impact that this can have on the city, in the way in which it stimulates a level of architectural awareness among the citizenry."

Milwaukeeans, most of whom had rarely talked about architecture and design, now use "Calatrava" as a household name, thanks to a saturation of local media coverage. The museum itself is getting exactly what it wanted—more visibility in the art world and in Milwaukee, with far more regional visitors. What seemed implausible before is now true—Chicagoans are making the 90-mile trek north to go to the Milwaukee museum. MAM's average annual attendance was 165,000 in 1999 and 2000, but attendance from the May 4, 2001, partial opening of the Calatrava addition to the end of 2001 was 375,000. When the addition was fully complete, 32,000 people filled the museum for the October 14 opening, far surpassing the previous typical big day for the museum—5,000 visitors—and the prior daily average of 1,000 visitors.

Will the Calatrava building be to Milwaukee what Frank Gehry's Guggenheim is to Bilbao? Milwaukee mayor John O. Norquist is wary of the comparison. "I don't think it's healthy for Milwaukee to look at this as a savior project," says Norquist, mayor since 1988 and a former public member of the American Institute of Architects national board of directors. "This analogy to Bilbao troubles me a bit because American cities have a tendency to feel that they have to suddenly transform themselves with new convention centers or stadia. Cities are successful because of their urbanity, a collection of parts, not one trophy."

Greenstreet, however, believes a comparison to Bilbao is valid. "Few buildings can transcend their basic function to become a powerful symbol of revitalization and forward-thinking. We've seen it in Bilbao, and most effectively in Sydney," he says. "Milwaukee's reputation is somewhat conservative—this project represents the readiness to embrace the unknown in a radically new building."

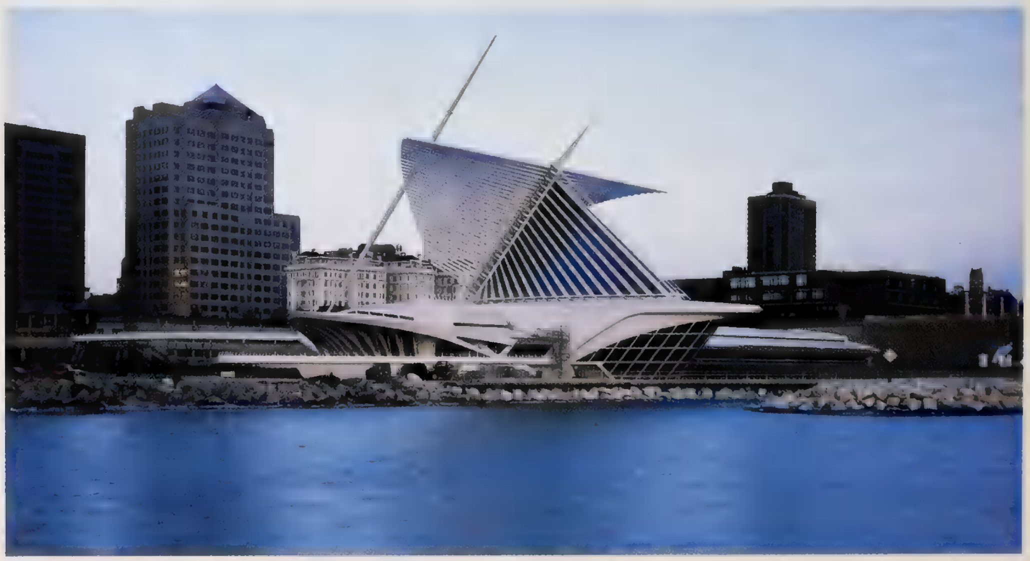
David Kahler, FAIA, agrees. Kahler is president of the Milwaukee firm Kahler Slater that collaborated with Calatrava as architect of record for MAM. "Symbolically, this has become a catalyst for a renewed vigor in the community," he says. "It has provided a degree of energy that has not been here for a long time, and the community now believes in itself."

Milwaukeeans buy into the dream, raise millions

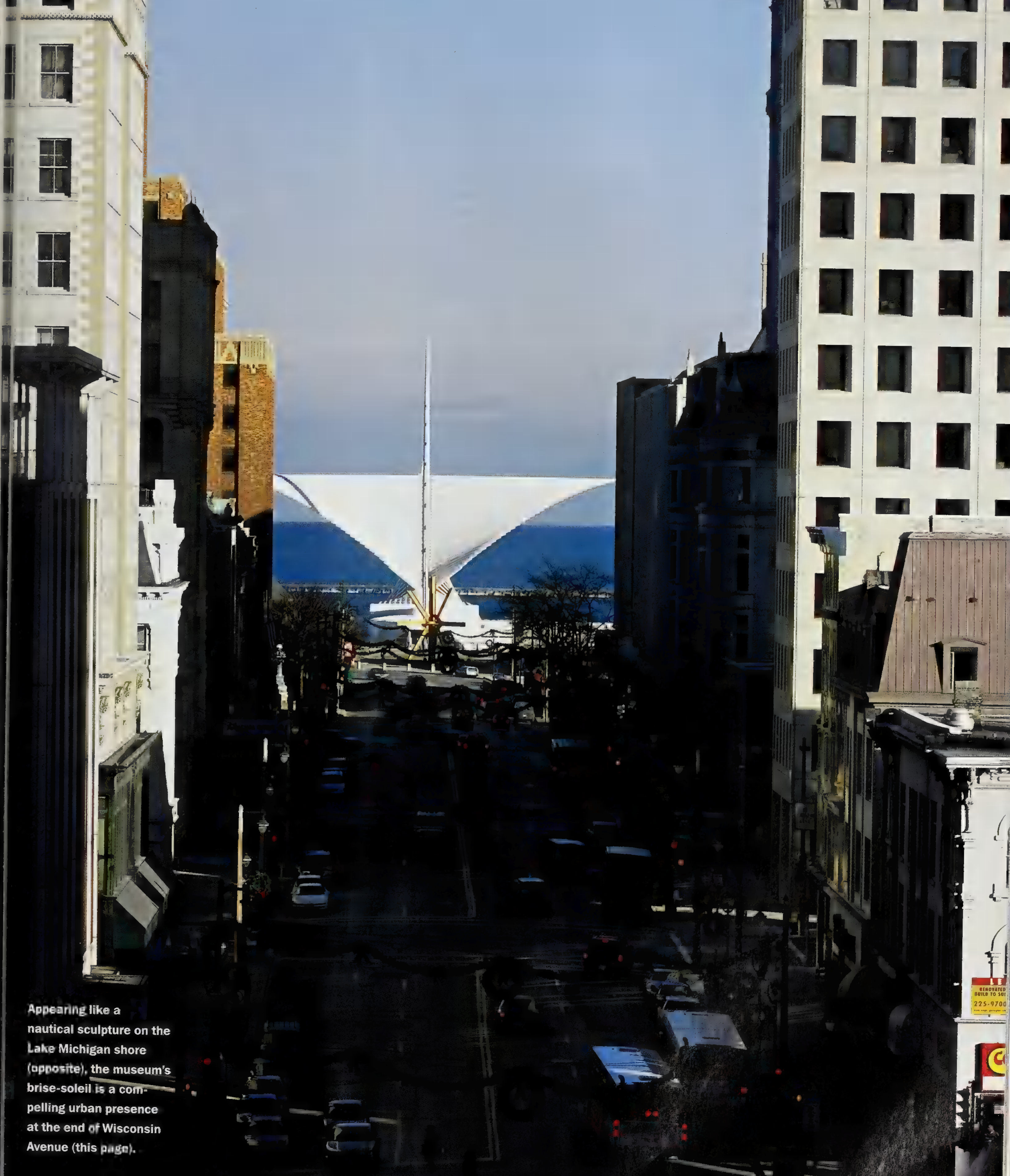
The museum required the largest fund-raising effort in Milwaukee history, and, in another first for the city, architecture was used to promote fund-raising. What started in 1993 as a modest proposal for a 40,000-square-foot addition costing $8 to $10 million grew by 1996 into a campaign for a $35 million project of 58,000 square feet. Money flowed in faster and in larger amounts than anyone associated with the museum had anticipated, allowing MAM to add elements to the program for a 142,000-square-foot, $75 million building project as part of a $100 million capital campaign. The campaign, a civic wonder, was completed earlier this year, raising $30 million in less than nine months and garnering 23 gifts of at least $1 million each. "What this building did and what Calatrava did was to sell a dream very effectively to an audience not known for dreaming," Greenstreet says. "And he sold the community an idea of a building that consumed that dream."

Calatrava's addition has also pushed the city's architects to reach for a higher level of design quality, according to Peter Park, director of city planning in Milwaukee. "The Calatrava building has clearly raised the bar for what clients and developers are striving for," he says. "It helps reflect a desire to explore more architecturally rich concepts and endeavors."

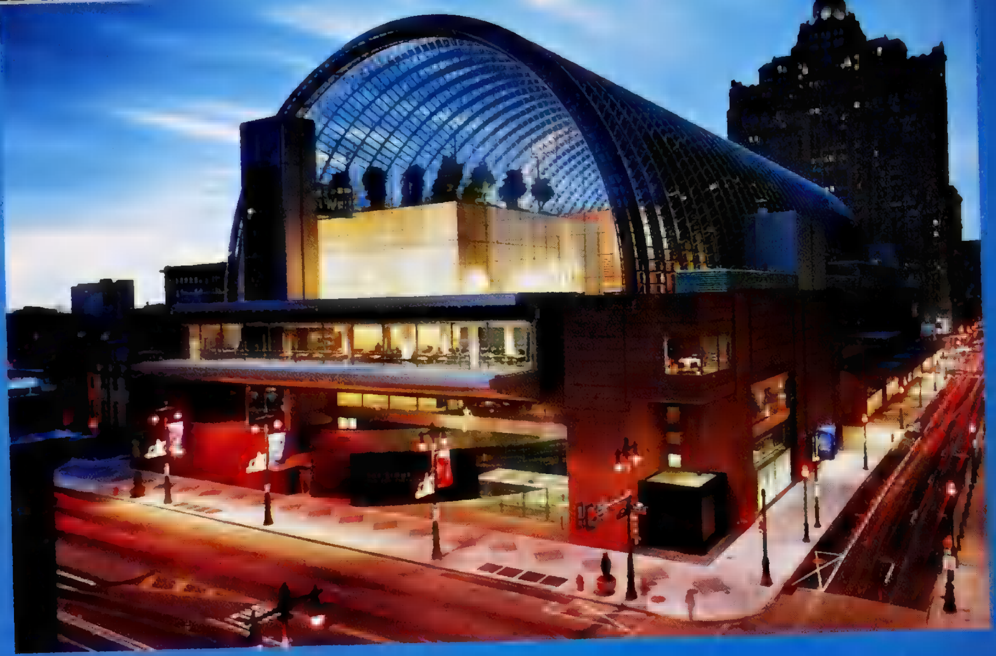
Greenstreet concurred: "It helps architects expand their clients' sensibilities by raising expectations of what constitutes great architecture in the city. That is a profound change." *John E. Czarnecki, Assoc. AIA*



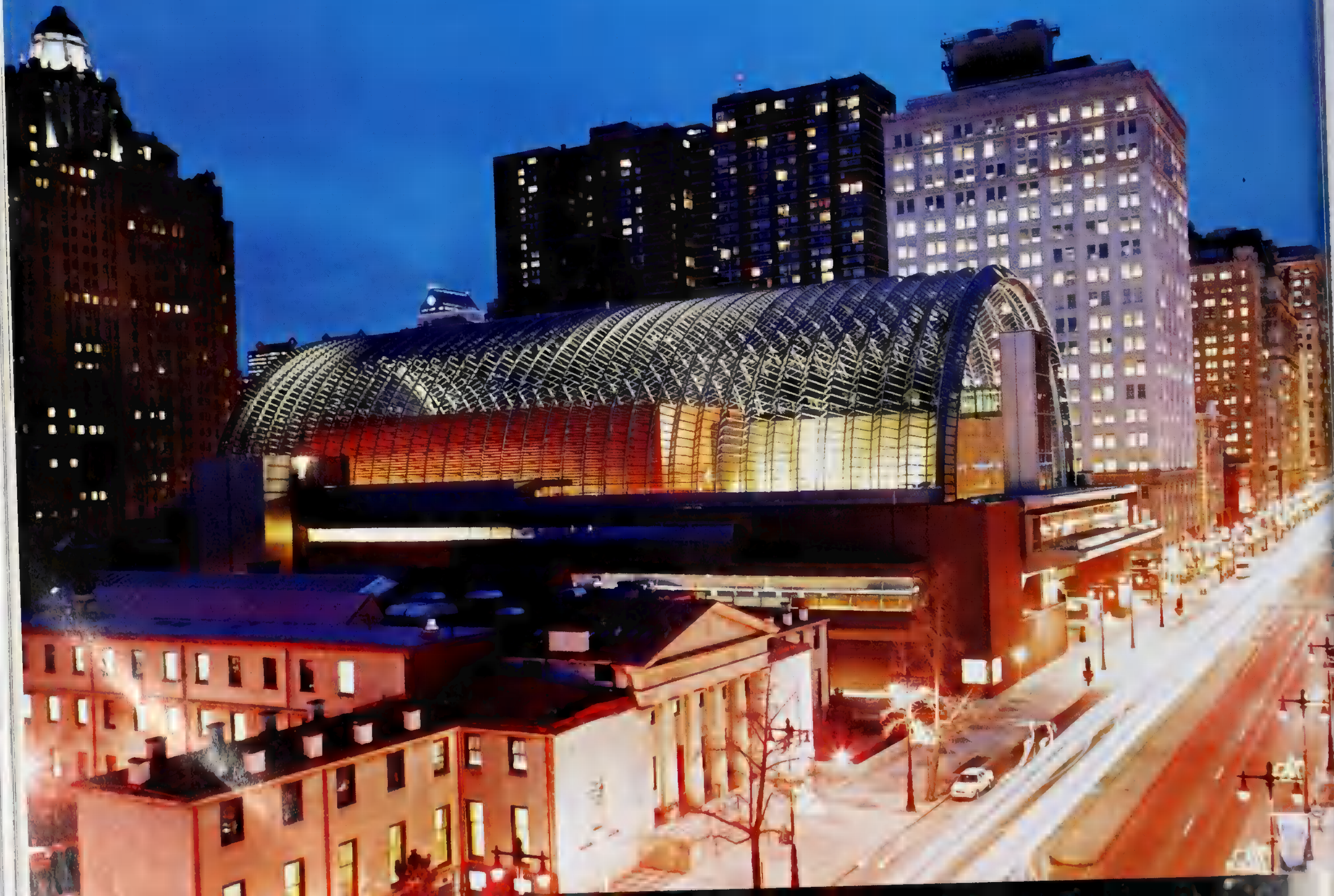
PHOTOGRAPHY: © ALAN KARCHMER/ESTO



Appearing like a nautical sculpture on the Lake Michigan shore (opposite), the museum's brise-soleil is a compelling urban presence at the end of Wisconsin Avenue (this page).



When twilight falls, the Kimmel Center comes to life on Philadelphia's Broad Street, now Avenue of the Arts (right and below). The center occupies a city block south of City Hall and north of the University of the Arts, which is in a 202-year-old Neoclassical building designed by John Haviland, with additions by William Strickland and a rear building by Frank Furness.

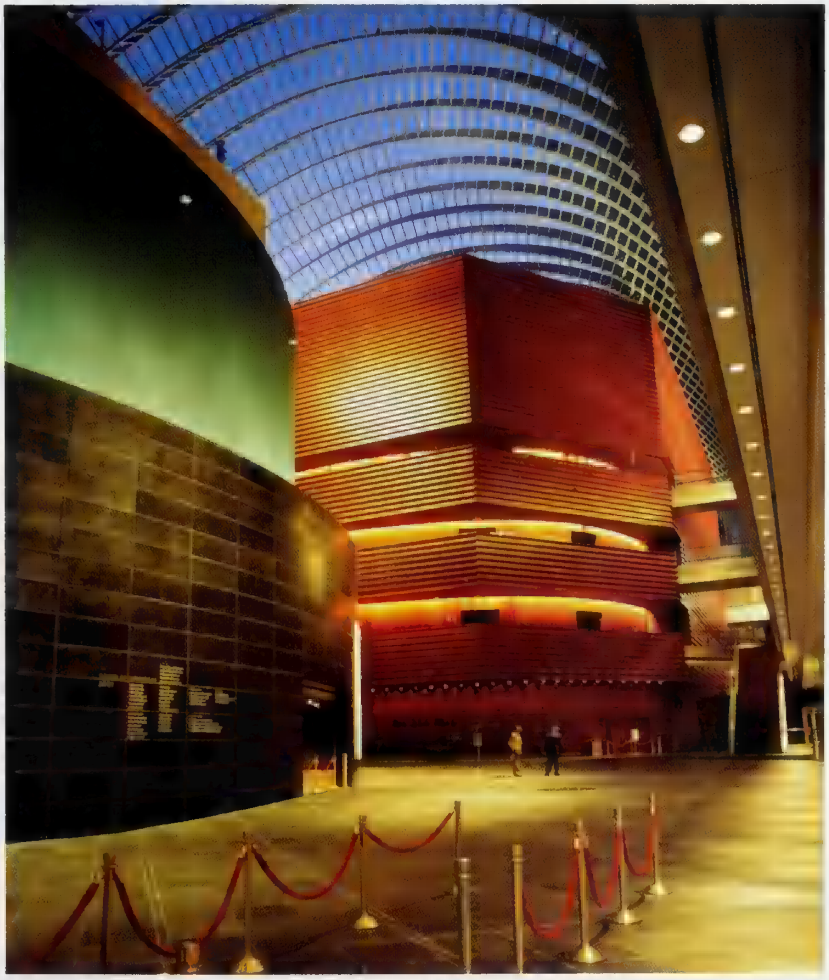


Rafael **Viñoly's** arresting and controversial design for the new **KIMMEL CENTER** offers the Philadelphia Orchestra a concert hall under glass

By Suzanne Stephens

The deep irony of the Kimmel Center's first-night opening in Philadelphia last December 14 was stunningly palpable. Sir Elton John was hunkered over a piano singing his heavily amplified heart out on the stage of Verizon Hall, the main auditorium for the new $265 million center. The whole reason everyone was there was because the Philadelphia Orchestra had carried on so long about the need for an acoustically reverberant space. The orchestra's old home, the much-revered Academy of Music, built in 1857 in an Italianate mode by Napolean LeBrun and Gustave Runge, was deemed too "dry"—its reverberation time too short. Out of this discontent eventually sprang the monumental, 429,085-gross-square-foot Kimmel Center, a 150-foot-high, glass-barrel-vaulted structure encompassing two auditoriums. Designed by the New York–based architect Rafael Viñoly, FAIA, the structure houses six performing arts companies, including the Philadelphia Orchestra, and straddles a full city block, just down Broad Street (now called Avenue of the Arts) from the old Academy.

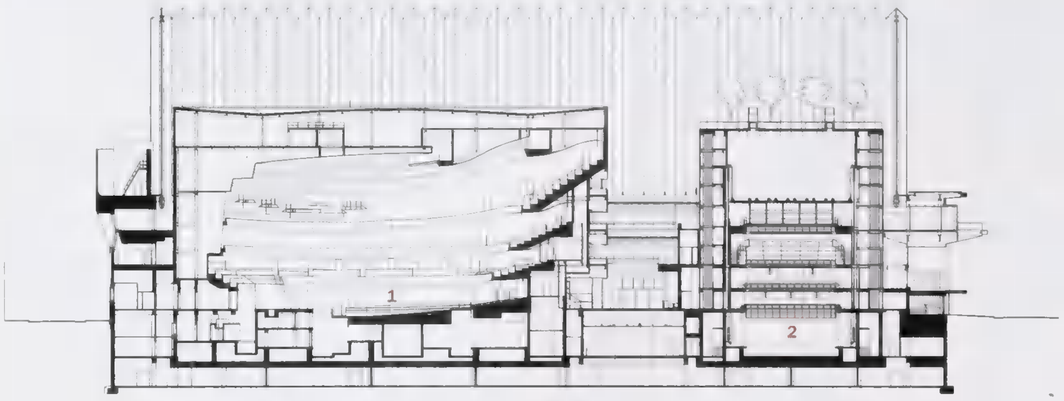
As striking as Elton John's array of audio equipment, replete with a ganglia of electrical cords and dangling video screens, were the nickelodeon-style light stanchions and trusslike appendages. True, the razzle-dazzle was gone by the second opening night, when the Philadelphia Orchestra was back in charge of the sinuous, mahogany-clad hall. But the memory lingers.



Clearly, those planning the big first nighter did not want the center to seem stuffy. The mise-en-scène provides a telling clue about Philadelphia's own quest for a certain image, which has in turn shaped the architecture of this civic center. The city's legacy of Quakerism, Sunday blue laws, and suburban Main Line helped mold its stodgy reputation. In 1958, when sociologist Digby Baltzell wrote *Philadelphia Gentlemen: The Making of a National Upper Class*, Eugene Ormandy was reigning conductor of the Philadelphia Orchestra. Of an afternoon, tweed-suited and mink-stoled matrons could stroll from the Nan Duskin store off Rittenhouse Square to the Academy to hear him create that "Philadelphia Sound." Ormandy had overcome the dry acoustics of the sumptuous La Scala-esque auditorium by bringing out a plushness in his string section once described as "the sound of pearls dropping on brown velvet."

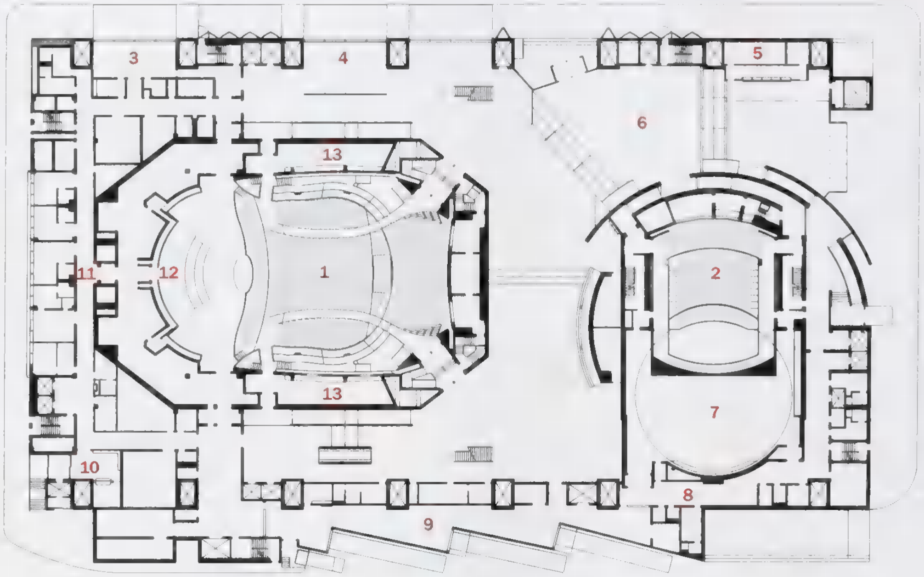
Already in 1958 modernity was changing the city's image. For one thing, another "Philadelphia Sound" was being generated out of "Sou'Philly," heralded by Dick Clark's *American Bandstand* TV show, where duck-tailed teenagers rocked and rolled to pop culture stars Bobby Rydell (né Ridarelli), Frankie Avalon, and Fabian. Architecturally, a new modern identity was being forged, as well. A few blocks away from the Academy, near City Hall, urban planner Edmund Bacon was creating Penn Center, which, along with the renewal of Society Hill, would lure suburbanites back

Project: *Kimmel Center for the Performing Arts, Philadelphia*
Owner: *Regional Performing Arts Center*
Architect: *Rafael Viñoly Architects—Rafael Viñoly, FAIA, principal and lead designer; Jay Bargmann, AIA, project director; Sandy McKee, AIA, project manager*
Acoustic designer: *Russell Johnson of Artec Consultants*
Theater consultants: *Theater Projects Consultants—Richard Pilbrow and David I. Taylor*
Structural engineers: *Dewhurst Macfarlane with Goldreich Engineering*
M/E/P consultants: *Arup*



LONGITUDINAL SECTION

1. *Concert hall*
2. *Recital theater*
3. *Greenroom*
4. *Gift shop*
5. *Box office*
6. *Lobby*
7. *Revolving stage*
8. *Recital theater support*
9. *Loading dock*
10. *Stage door*
11. *Concert hall support*
12. *Stage*
13. *Reverb chamber*



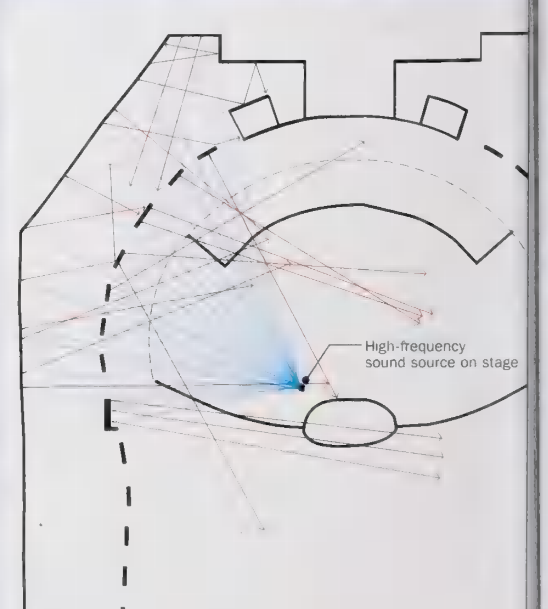
FLOOR PLAN

The Kimmel Center has a reinforced concrete foundation, rubber pads to insulate against vibration, then a concrete basement, and a steel-frame structure above. Vertical cantilevered box columns support the general building and provide space for HVAC.

Now showing: Forty years' worth of acoustical innovations

The acoustical innovations that have debuted over the past four decades in the most sophisticated concert halls and auditoriums were inspired by economics. "In the 1950s, it became evident to auditorium owners that they had to have all kinds of entertainment in order to make money," says Russell Johnson, whose firm, Artec Consultants, designed the acoustics for both the concert hall and the recital theater at the Kimmel Center. "Around 1960, I pioneered the concept that in order to do the very best for each kind of performance that goes on a stage, you have to be able to adjust the acoustics of the room to match the event's acoustical requirements. That's the way we now approach concert hall design."

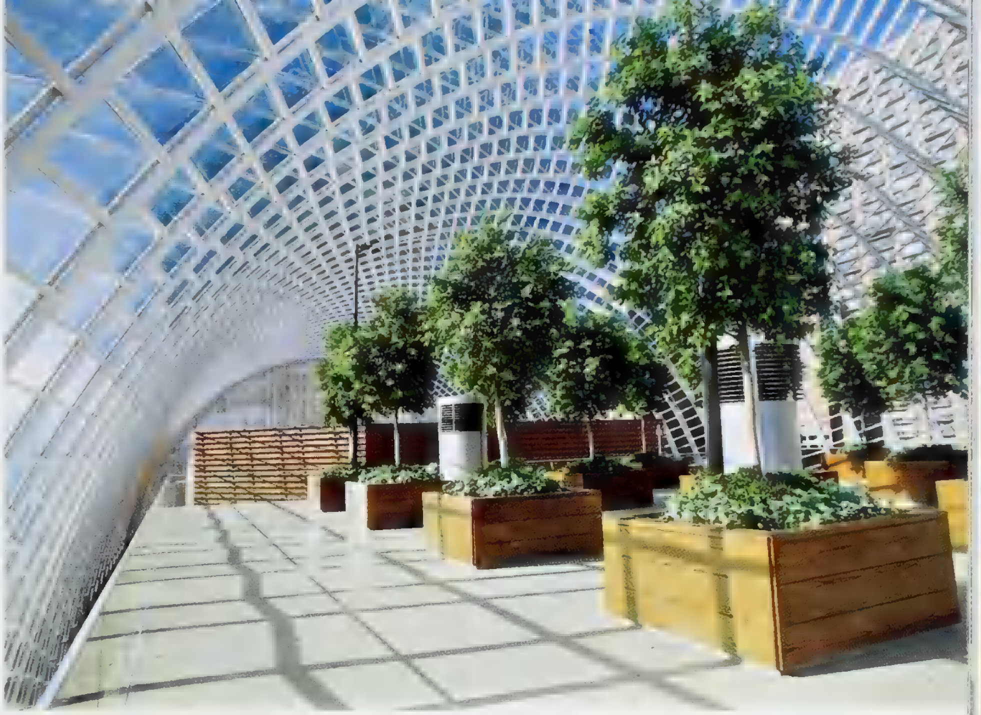
Most of the ideas Johnson began developing back then are built into Verizon Hall. The most prominent is the use of hinged panels to allow the movement of sound between the audience chamber, where the stage and seating are located, and acoustics control chambers located around the audience chamber's perimeter. These allow the volume of the hall, and therefore its reverberance, to be adjusted. To make the room more reverberant, the doors are opened to allow the sound energy to bounce around the control chamber and mix with the sound from the stage. When the doors are opened more fully, more reverberance results. A second system in use is an acoustical canopy, which hangs over the stage. It has three sections that can be raised or lowered independent of each other to further adjust the hall's acoustical environment. The third element is a series of acoustic-control curtains—lengths of fabric that can be lowered in front of the walls in order to change reverberation time. After Verizon has been in use for some time, Artec will recommend acoustical settings for each type of event typically held in the hall. *Charles Linn, AIA*



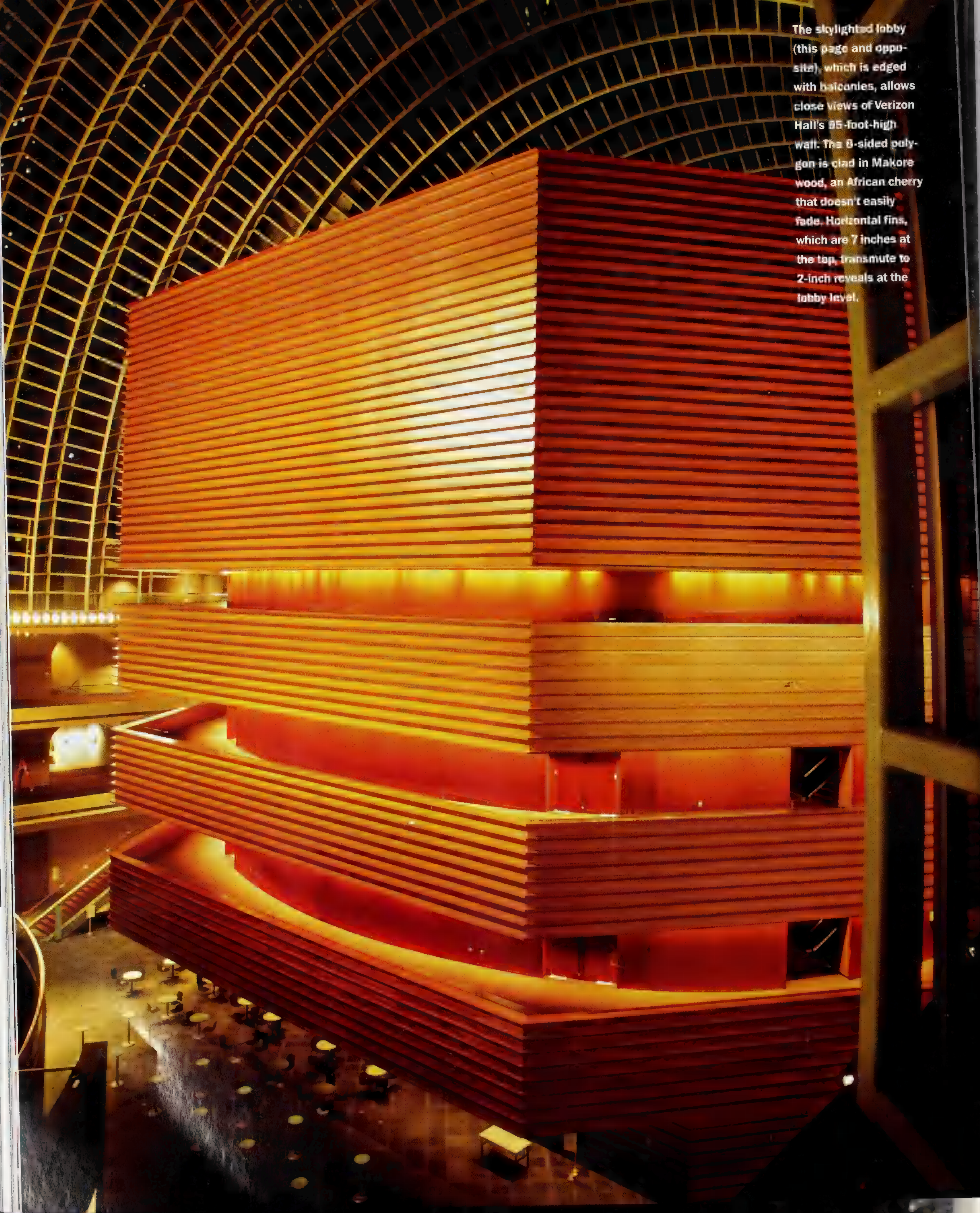
RAY TRACING STUDY FOR ACOUSTIC CONTROL CHAMBERS downtown. The results were urbanistically successful but bland. In 1958, Louis Kahn was not involved: He was designing his only big hometown job, the Richards Medical Research Laboratory for the University of Pennsylvania. That's where Robert Venturi was teaching, and his future partner, Denise Scott Brown, had just begun to study planning.

Perhaps one of the ironies of our times is watching taste subcultures blend over the years. Today, if you want a symphony hall, you design one that can also accommodate ice-skating performances. And if you plan an opening night, you have Sir Elton John and the Philadelphia Orchestra. (Not to mention that on the first night, Paul Anka and the $30 million donor, dress manufacturer Stanley Kimmel, crooned a duet, Sinatra-style.) A concert hall that can handle this combination has to be sufficiently stuffy (meaning grand), but still pop (lively). This is something that Rafael Viñoly accomplished to a large degree with a spectacular sense of show biz. And, ironically, this could be the reason why Venturi Scott Brown (VSBA) ultimately lost its first major downtown project, the commission it had won in 1987 to design the new home for the Philadelphia Orchestra.

Although Venturi had coined the term "both/and" architecture, his and Scott Brown's scheme was perceived by the orchestra clients as "either/or." The firm's first design was too discreet. A redesign featuring a polychromed, metal and glass pedimented facade, festooned with musical notes, seemed too commercial (or too *American Bandstand*?)



A roof garden with 16 planters sits atop the Perelman Theater, sheltered by the arched vault of folded-plate Vierendeel trusses, (above). The 150-foot-high vault, spanning 174 feet, is made of two types of rectangular steel tubes: one, 5 by 5 by ½ inches; the other, 5 by 4 by ½ inches. The glass panels are 7 by 3 feet by 3 inches.

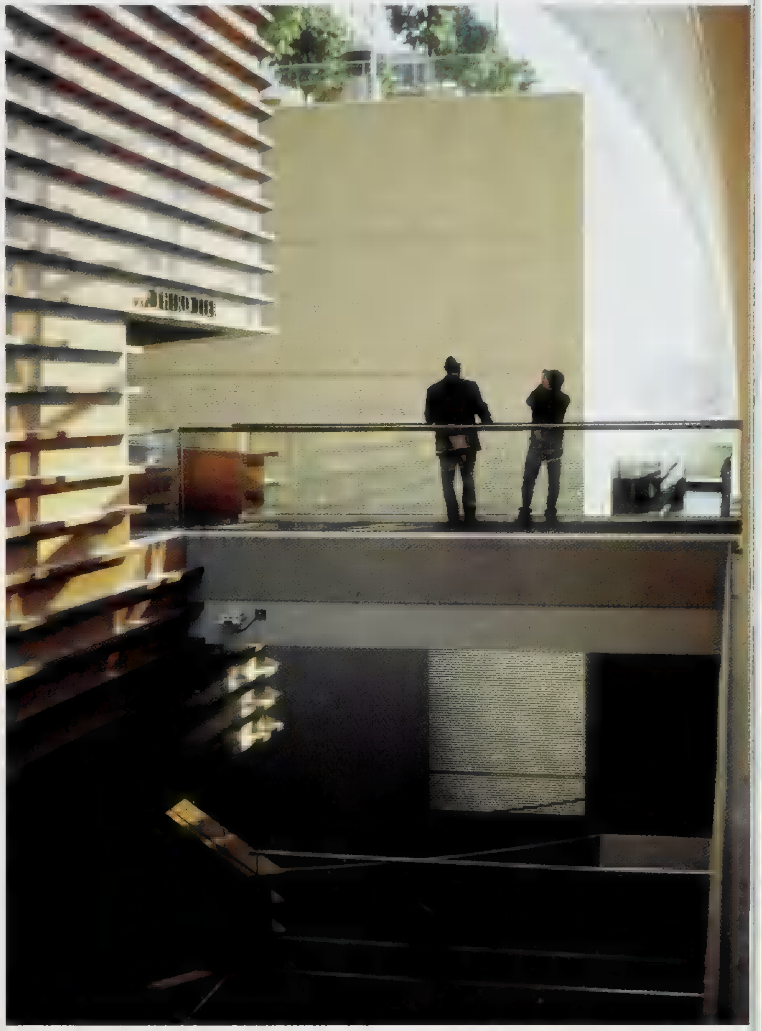


The skylighted lobby (this page and opposite), which is edged with balconies, allows close views of Verizon Hall's 95-foot-high wall. The 8-sided polygon is clad in Makore wood, an African cherry that doesn't easily fade. Horizontal fins, which are 7 inches at the top, transmute to 2-inch reveals at the lobby level.

To be sure, Venturi Scott Brown's commission was modest, a privately funded hall just for the Philadelphia Orchestra, with a budget of $74 million ($76 million for the second version). But the clients weren't enchanted, and fund-raising stalled. Around 1995, then-mayor Edward Rendell conceived of a large performing arts complex of which the orchestra would be a part, all under the aegis of a public-private entity named the Regional Performing Arts Center (RPAC). The Philadelphia Industrial Development Corporation (PIDC), a quasi-public entity headed by former city-planning director Craig Schelter, acquired the land on behalf of the city and served as a conduit for $65 million in state money. The Philadelphia Authority for Industrial Development leased the land to RPAC, which in turn rented space to the various participants.

The linchpin in the new mechanism was developer Willard Rouse III, who had been tapped by Rendell as RPAC's voluntary head. The nephew of developer James Rouse, Willard III had put his indelible stamp on Philadelphia in the 1980s by building Liberty Place, two garish Decoid Postmodern towers, one by Murphy/Jahn, the other by Zeidler Roberts. In so doing he broke the Philadelphia gentleman's agreement never to erect a tower higher than William Penn's statue on City Hall. Clearly, Philadelphia had changed.

With its mission, PIDC, on behalf of RPAC, invited only architects who had experience designing an auditorium to compete. (VSBA declined). The shortlist came down to Cesar Pelli, Barton Myers, Pei Cobb Freed, Viñoly, and Zeidler Roberts. Evidently, Viñoly, known for his ebullient charm, made a spellbinding presentation. It didn't hurt that he knew a lot about music: His father was artistic director of the Sodre Opera Theater in Buenos Aires, and Viñoly keeps a grand piano in his office.

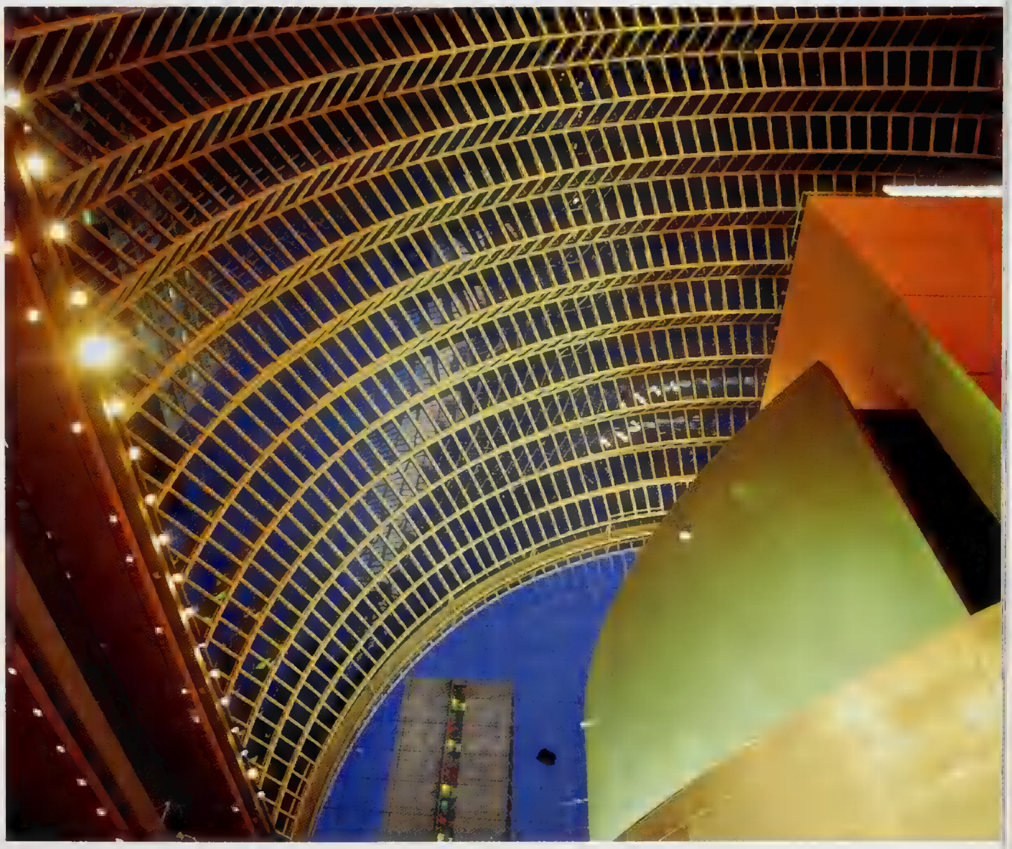


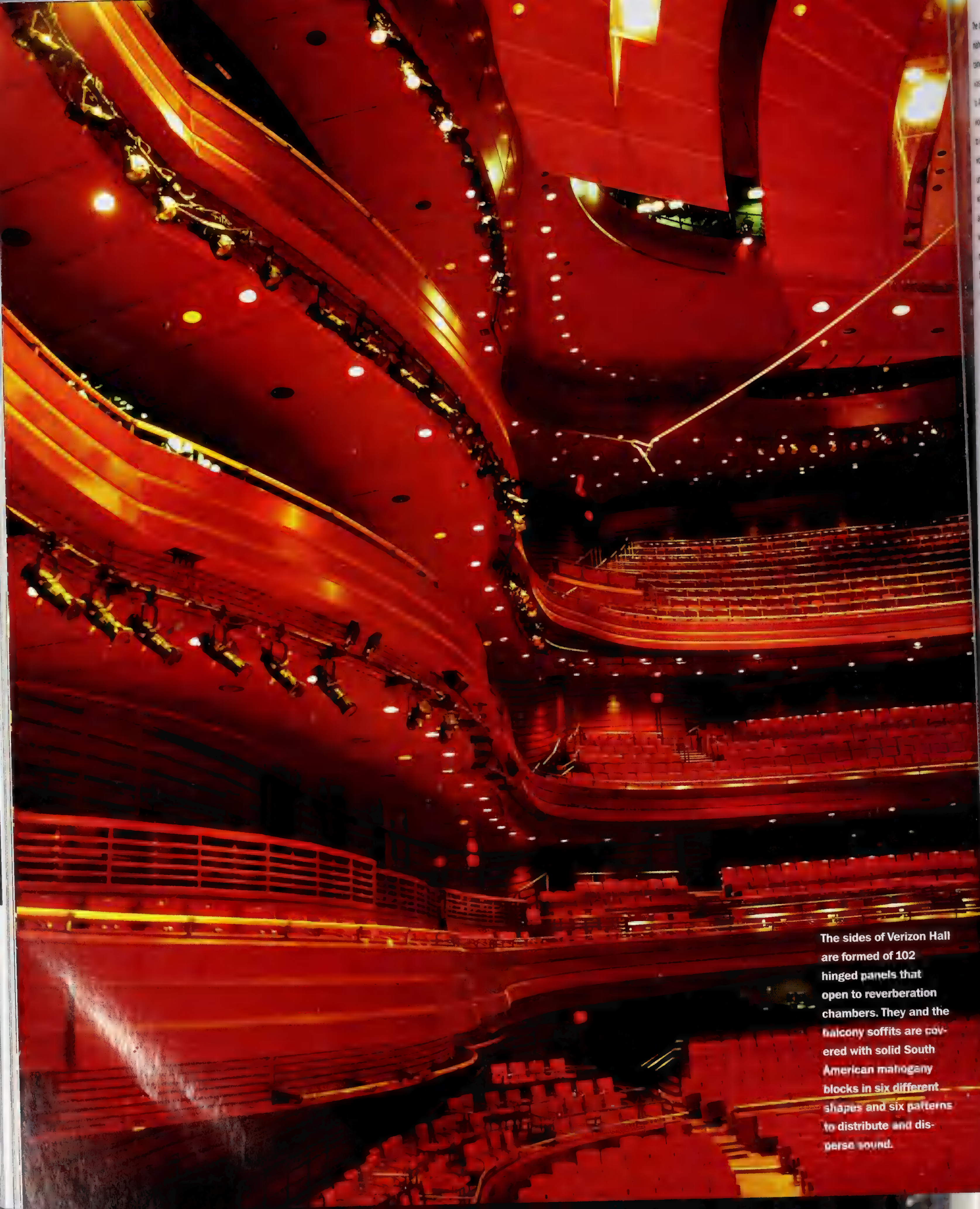
Strengths of the Kimmel Center

Viñoly also knows how to create a big architectural whammy. His design calling card is the roof, as seen in his Lehman College Gym (1994), or the awe-inspiring atrium, seen in the Tokyo International Forum (1996). In Philadelphia, you get the shimmering, barrel-vaulted roof balanced on steel columns, and a sun-splashed atrium where the two large, sculptural, steel-framed containers for the auditoriums are moored.

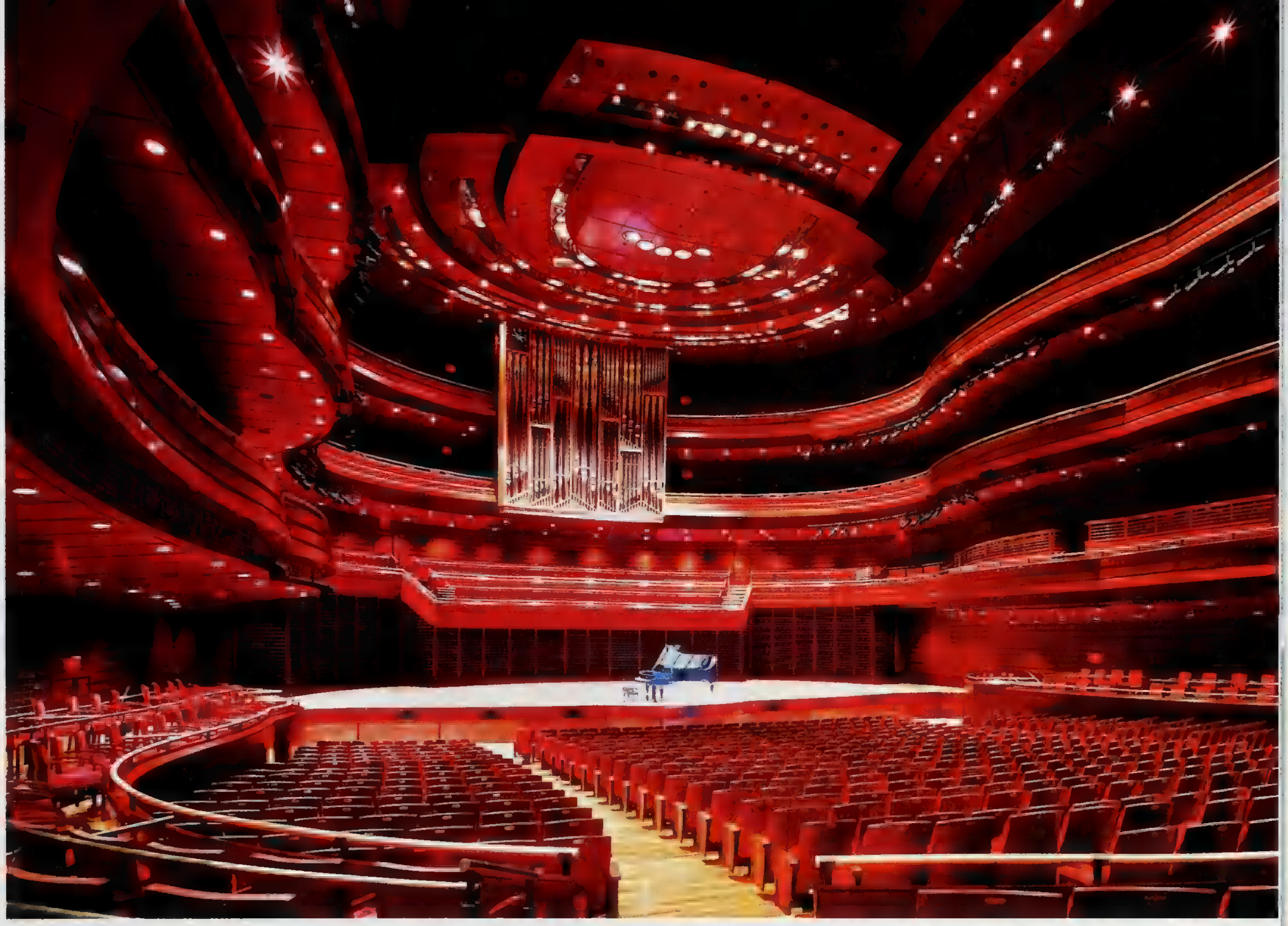
The pièce de résistance is Verizon Hall (the Perelman Theater is being finished at press time). Sheathed on the outside in a reddish Makore wood, the cleanly crafted polygonal form has horizontal fins that project 7 inches at the top, then become 2-inch-deep reveals at the lobby level—a somewhat megascale homage to Frank Lloyd Wright's Sturges House (1939) in Los Angeles. Inside, the hall is clad in sumptuously curved mahogany panels, to which are added solid mahogany wood diffusion strips. The effect is ornate, warm, and stately without being a kitsch imitation of 19th-century opulence. The hall's cello shape and use of hardwood were only two of the strategies that Viñoly, acoustical consultant Russell Johnson, and theatrical consultant Richard Pilbrow labored over to keep the "Philadelphia Sound," while still solving all the acoustical problems that had prompted the new structure (see sidebar, p. 108).

As for the Perelman Theater, the geometrical amalgamation of a cube with rounded extensions, clad at the base in black granite (honed and polished), and a goldish corrugated steel top, is designed for instant convertibility. With a push of a button, this 650-seat recital hall easily changes into a theatrical playhouse. Viñoly and





The sides of Verizon Hall are formed of 102 hinged panels that open to reverberation chambers. They and the balcony soffits are covered with solid South American mahogany blocks in six different shapes and six patterns to distribute and disperse sound.



The quartered-figured mahogany (from sustained growth forests) was chosen, according to Architectural Woodworking Industries, to obtain a grain that would have a glossiness under low light. The walls of the 2,543-seat auditorium are faced with ½-inch-thick African mahogany veneer with a fire-rated core. The topmost ceiling is solid plaster, 3 inches thick. Applied to that are ⅜-inch-thick, fire-rated mahogany panels.

Pilbrow came up with a scheme where a revolving circular stage, surrounded by audience seats, rotates to the back, allowing a proscenium stage with a fly tower to take its place. The seating in front of the stage can be dropped to the basement via an elevator, with a floor sliding out for dance and theater performances, or parties.

Now the hard part

As a performing arts center, the Kimmel has strong selling points. Its striking use of technology with arches of folded-plate Vierendeel trusses and glass panels is captivating; the insertion of delicate, cable-supported glass curtain walls at both ends is impressive. The roof garden on top of the Perelman Theater, where trees in planters are shielded by the gargantuan glass vault, creates a play in scale that is awe-inspiring. But the Kimmel Center's exterior is another story. Looking at the building from the pedestrian's standpoint is oppressive. Even if the scale of buildings at this end of the avenue is variegated, Broad still has a pedestrian feel to it. Yet where the barrel vault meets the base, the klunkiness shocks. We are back to the Modernist dilemma: The massing and materials of the steel-framed lower section, especially the cheap-looking brick cladding, are drab and perfunctory; a sense of detail nonexistent. You go from a transparent version of Boullée's Bibliothèque Nationale on the top to Wal-Mart on the bottom.

Inside the Kimmel Center, the heavy-handedness continues. At the edges of the atrium are cantilevered balconies, accessible by grand stairs. The materials and detailing of the balconies themselves received the short end of the design stick. The gypsum-reinforced glass surface is bland, and the balustrades commonplace. Meanwhile, the acoustic solution has been cautiously embraced. Verizon Hall has "clarity," says Barbara Jepson of *The Wall Street Journal*, but "the loud orchestra passages were brittle." Other reviews were mixed. These things take time.

So in the end, was it worth all the angst? The good news is that six performing arts organizations have a home, and the Academy of Music is still in use for opera and ballet. The disconcerting news is that the orchestra is in debt $4 million with a $37 million budget and has 400 fewer seats than it had with the Academy. That means higher prices.

Architectural oomph costs money. And the cruelest irony offered by much of the design is that to make the big splash (Verizon Hall, the glass vault), you need to take shortcuts. This paring down of design creativity, use of materials, and detailing evidently was relegated to the outer, lower ramparts, unfortunately where it shows. The building isn't Bilbao. Yes, it's unfair to measure every major arts building on that scale. But, after all, that's how cities are trying to get into big time now—with "szhooshed-up" museums and performing arts centers. Instead of giving Philadelphia a breathtakingly new civic image, Kimmel Center presents a strange combination of both grand and pop. The pop is not lively, just conventional, rather like a sports stadium. So its "both/and" mix doesn't entirely come off. Like hearing Elton John in Verizon Hall. ■

Sources

Steel frame: *Helmark Steel*

Masonry cladding: *Beldon Brick*

Wood: *Architectural Woodwork Industries with Imperial Woodworking (Verizon Hall); Haggerty Woodworking (Perelman Theater)*

Glass, end walls: *National Glass (contractor); PPG (lights); Dlubak (lamination)*

Glass, barrel vault: *Architectural Skylight (manufacturer); Viracon (lights)*

Elastomeric roofing: *EDPM; Johns Manville*

WWW For more information on the people and products involved in this project, go to Projects at **architecturalrecord.com.**

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WHETHER BURIED UNDER A PARK OR WRAPPED IN TRANSLUCENT GLASS, THESE BUILDINGS EXPRESS THEIR COMMUNITIES' NEEDS AND SERVE AS THEIR PUBLIC FACE.

1.

IJsselstein, the Netherlands

Ben van Berkel and Caroline Bos's UN Studio designs a city hall that floats above a new urban plaza and helps link the old town with the new.

2.

The Bronx, New York

A recreation and arts center by Hanrahan + Meyers offers kids in the Hunts Point area an alternative to the prison next door.

3.

Vancouver, British Columbia

Its roof a park and its front a marina promenade, this concrete-and-glass building by Henriquez Partners serves an upscale community.

4.

Chula Vista, California

Inspired by the agricultural buildings that have been replaced by suburbia, Rob Wellington Quigley creates a community center in a park.

By Clifford A. Pearson

Whose community is it? That's the key question behind each of the buildings shown here. Before the architects start designing, before the administrators begin programming, even before the client selects a site, the major players must agree on whom the building will serve. In a society with changing demographics and fuzzy lines between public and private realms, defining community is a tough—potentially explosive—task.

The four projects in this month's Building Types Study come from three different countries and represent a range of social contexts. One project is a city hall in a historic European city, another is a recreation and crafts center in a new stretch of southern California suburbia. One serves a low-income neighborhood in the south Bronx, while another is surrounded by luxury apartment towers. All of the projects, though, share a similar scale and address a common set of design issues. Who are the people who will use the building? What are their needs? How can the architecture relate to what is already built in the area yet also point to new possibilities? How can the building be welcoming and at the same time secure?

Once upon a time, municipal governments built public facilities, and private groups such as developers or homeowners associations would build clubhouses open just to a particular group of people. Today, such easy divisions of responsibilities are less common. For example, a private company built the Coal Harbour Community Center in Vancouver as part of its deal to develop luxury housing, then handed it over to the city to own and run. A similar public-private partnership created the Heritage Park Community Center in Chula Vista, California. Even in Holland, where the public sector traditionally carries a greater burden of community services than government does in North America, the city of IJsselstein brought in a private company to operate the theater in its new city hall.

While planners had envisioned community facilities for Coal Harbour and Heritage Park from the beginning, the Hunts Point and IJsselstein projects had to elbow their way into existing urban settings. Either way, the best community buildings reach out and make connections to their surroundings—by creating new outdoor spaces, reshaping existing spaces, recalling materials found in the area, or acting as hinges between old and new.

No matter what approach its architects take, a community building can help define a neighborhood, putting an architectural face on a diverse mix of people. That's why these projects matter so much. ■

WWW For additional community buildings, and more information on the people and products involved in the following projects, go to Building Types Study at *architecturalrecord.com*.

IJsselstein City Hall

IJsselstein, the Netherlands

1

A COMBINATION CITY HALL AND THEATER BY UN STUDIO MAKES CONNECTIONS BETWEEN DIFFERENT PARTS OF TOWN AND DIFFERENT ERAS.

By Tracy Metz

Architect: *UN Studio—Ben van Berkel, architect; Harm Wassink, project leader; Henri Borduin, Jeroen Steur, Oliver Heckmann, Luc Veeger, Casper Le Fèvre, Marion Regitko, Kiri Heiner, Jacco van Wengerden, Aad Krom, Niek Jan van Dam, Karst Duërmeyer, collaborators*
Owners: *City of IJsselstein (city hall); Het Fulco (theater)*
Consultants: *Lodewijk Baljon (landscape); Peutz & Associes (acoustical)*
General contractor: *Aan de Stegge*

Size: *97,200 square feet (city hall and theater); 75,600 square feet (parking)*
Cost: *$7.3 million (excluding parking)*

Sources
Glazing system: *Pilkington*
Recycled green glass: *Profilit*
Acoustical panels: *Isotoon*

Program

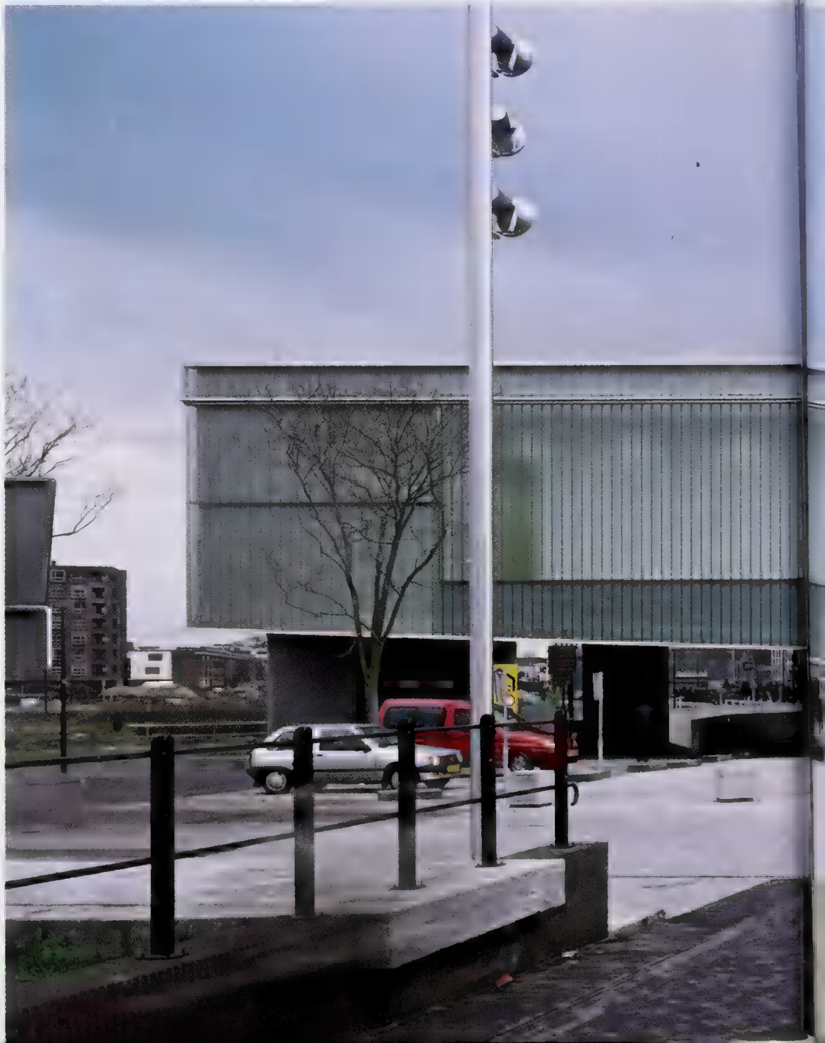
With a new city hall designed by UN Studio, the Dutch town of IJsselstein, a few miles southwest of Utrecht, marks its coming of age. Not literally—the town is centuries old—but emotionally. By providing an urban focal point, public space, and unusually thoughtful architecture, the town hall fills some critical gaps in IJsselstein's civic fabric.

The client's requests were straightforward: build a combination of a city hall, theater, and café with space for social activities and underground parking for 250 cars. Not too expensive, please, and not too tall (no more than three stories). And somehow it must negotiate a tricky site on the border between the town's small historic center—where a windmill still grinds flour every day—and a large expanse of new housing.

Solution

IJsselstein's goals in building the city hall were to create some formal cohesion between old and new and provide residents with a new social and cultural venue. The area around the hall is emerging as an extension of the old town center, with a supermarket, apartments, and a stop for a light-rail line.

Before the town hired Ben van Berkel and Caroline Bos's Amsterdam-based UN Studio, it hired a large urban design firm from Rotterdam to develop a general configuration plan. "The first thing we did was switch the cultural and civic functions around," says Harm Wassink, a project leader for UN Studio. "It seemed logical to place the entrance to the café on the side where pedestrians and bicycles come by and to put the entrance to the city hall on the new public square across from the historic center," adds Tobias Walliser, the other project architect. The slow traffic on the east side is "guided" into the urban domain by extending the red asphalt of the bike path under the building and

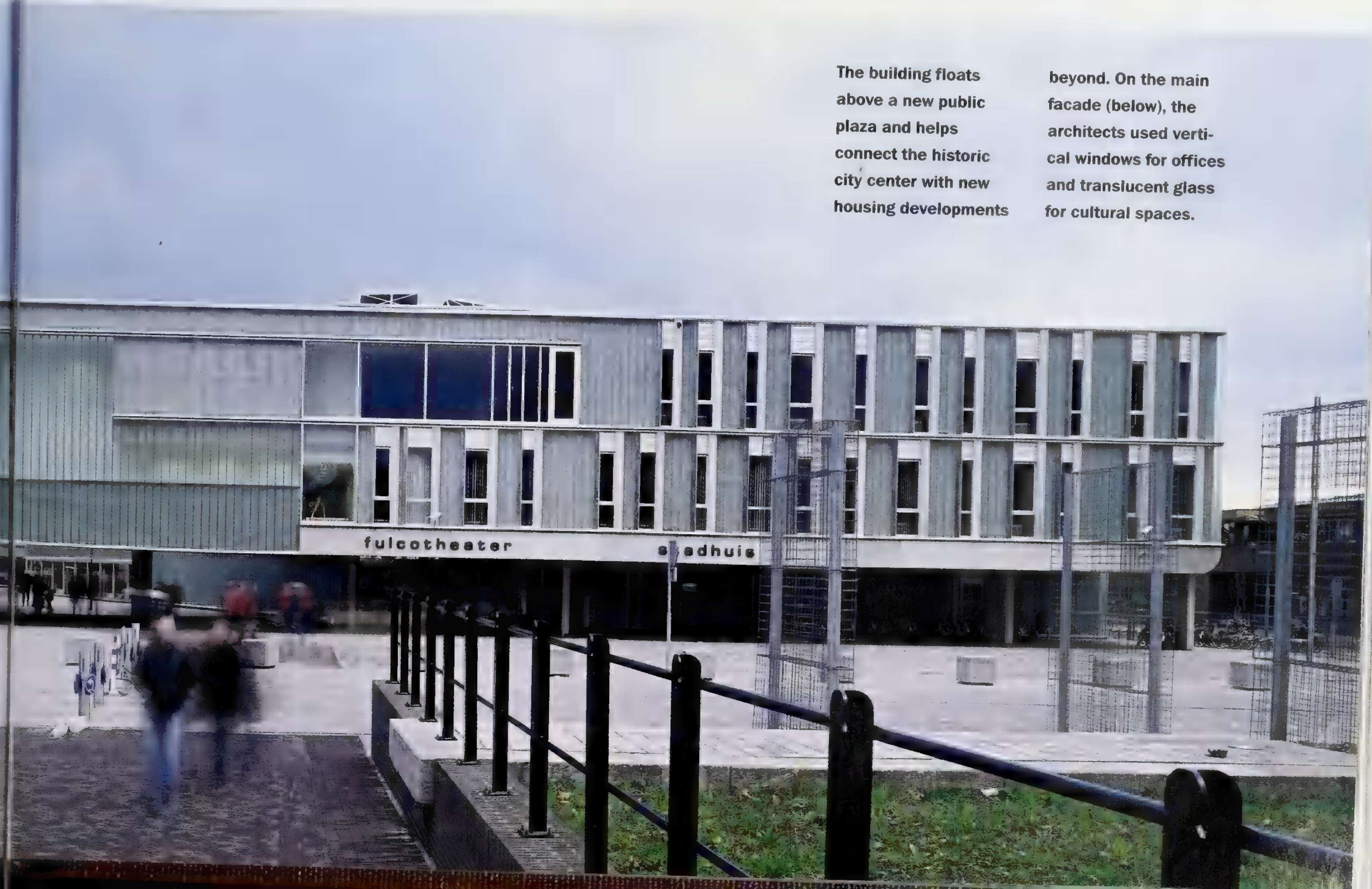


PHOTOGRAPHY:

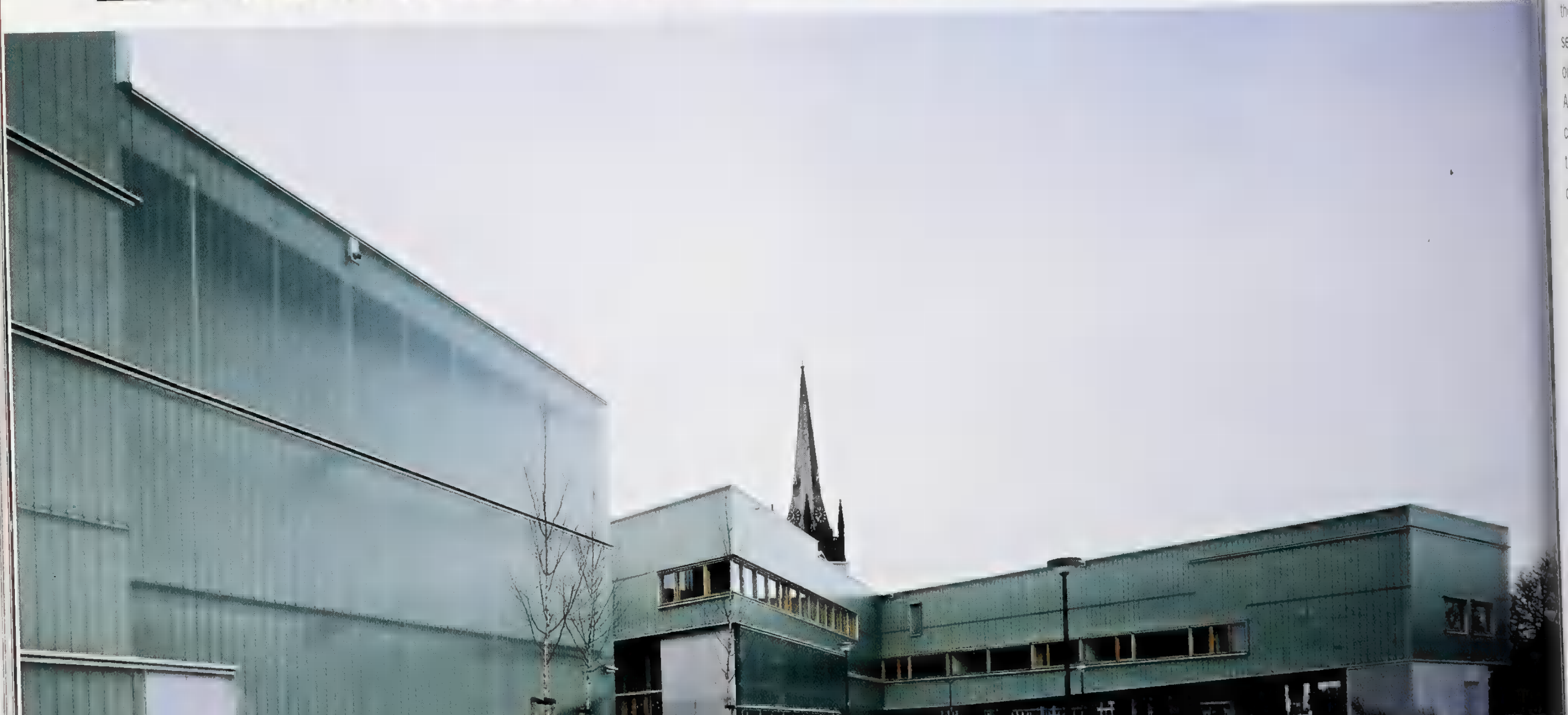
RECORD's Amsterdam correspondent, Tracy Metz writes about architecture and landscape for NRC Handelsblad.

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

The building floats above a new public plaza and helps connect the historic city center with new housing developments beyond. On the main facade (below), the architects used vertical windows for offices and translucent glass for cultural spaces.



The architects wrapped the building in a range of different kinds of glazing, including a translucent green material made from recycled glass that is used on the theater (below). The building provides a variety of spaces for culture, as well as city offices and chambers for the city council (opposite, top).



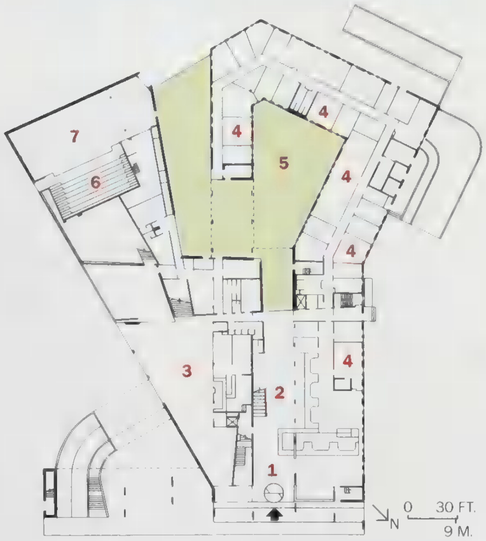
into the new plaza.

To root the building in its context, the architects oriented it along sight lines set by its two big public neighbors, a Dutch Reformed church and a Catholic basilica. The architects consistently maintained these lines throughout the building. They staggered the concrete piers supporting the long cantilevered wing of the north facade so the lines of vision are uninterrupted as you look out the building. They even arranged the theater's 370 seats along these lines, setting them at an angle to the enclosing box and squeezing the bright red aisles into long thin triangles that create a momentary sense of disorientation.

While most buildings in town are brick, UN Studio decided to wrap the city hall in something quite different: a translucent material made of recycled glass that comes in U-beams and gives the facade a sense of depth. Using the material in single or double layers to make it less or more opaque, and contrasting it with clear glass, the architects were able to create separate zones in the facade without interrupting the building's mass. And by applying it to the building's corners and silhouetting it against the sky, they created delicate, diaphanous edges.

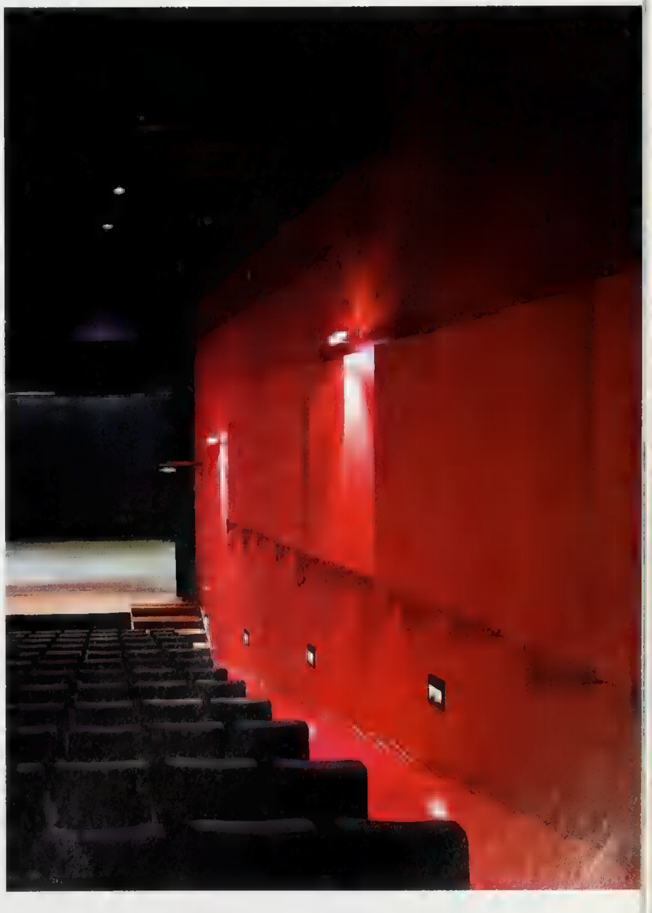
Commentary

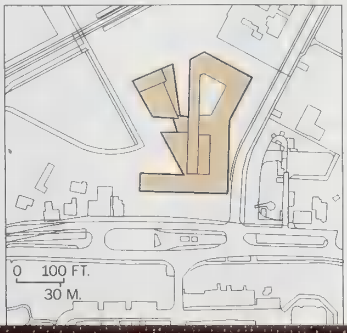
At first, UN Studio wanted to integrate the building's civic functions with its cultural ones. But the client kept pushing for greater separation. In the end, the only overlapping of the building's two largely autonomous halves is in the movie hall, which literally breaches the divide on the first floor, next to (but not visible from) a rather depressing, windowless wedding chamber. The courtyard, beautifully landscaped with rocks and narrow water channels by Lodewijk Baljon, symbolizes the uneasy cohabitation of these two functions in their glass cage: no touching, only looking. Given these constraints, it is to the architects' credit that this building manages to put on a dignified, convincing, and coherent public face. ■



GROUND FLOOR

1. *Lobby*
2. *City council services*
3. *Café*
4. *Office*
5. *Courtyard*
6. *Theater*
7. *Stage*





Hunts Point Community Center

The Bronx, New York

2

HANRAHAN + MEYERS ARCHITECTS DESIGNS A "SOFT, SCULPTURAL" PLACE FOR RECREATION AND THE ARTS IN A TOUGH NEIGHBORHOOD.

By Clifford A. Pearson

Architect: *Hanrahan + Meyers Architects—Tom Hanrahan, AIA, Victoria Meyers, AIA, partners; Rhett Russo, project architect; Sam Leung, Jason Holmes, Phillip Binkert, project assistants*

Client: *New York City Department of Design and Construction*

Engineers: *LERA (structural); Lakhani & Jordan (mechanical/electrical/plumbing)*

Landscape: *Signe Nielsen*

Construction manager: *STV Construction*

General construction: *TJM Construction*

Size: *18,625 square feet*

Completion date: *October 2001*

Sources

Weathered concrete block: *Anchor Products*

Aluminum and glass curtain wall: *YKK Industries*

Standing-seam metal roof: *Englert*

Bi-folding security doors: *Wilson Doors*

Metal halide lights: *Holophane*

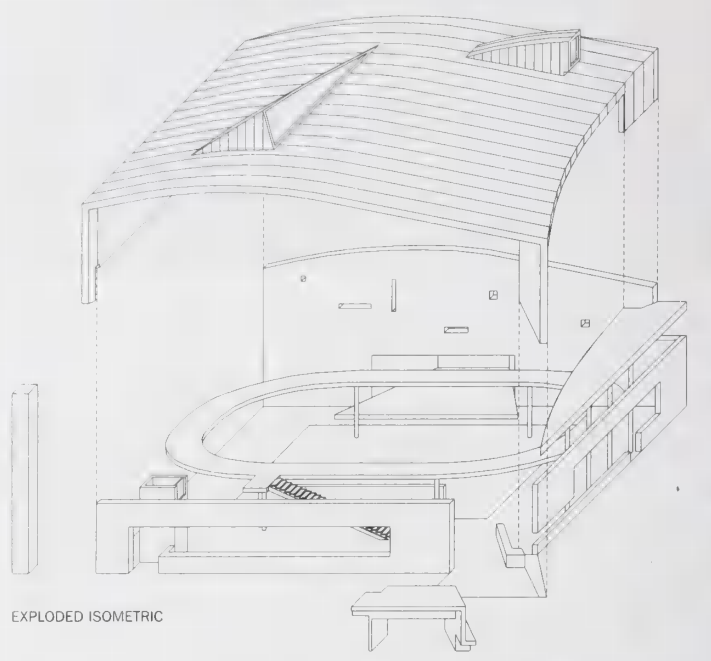
WWW For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

Program

A spit of land pushing into the East River, Hunts Point is where New York City's food chain begins: literally, with the sprawling wholesale food market named for the area, and figuratively, as where many Dominican and Puerto Rican immigrants begin their struggle up the American economic ladder. It's a tough place, with as many people sliding down as moving up. Any facility that offers a sense of stability is welcome there. The Hunts Point Community Center is such a haven, providing a refuge for kids to play basketball, do their homework, or act in a play.

The community center's immediate neighbors underscore some of the promises and failures of the South Bronx: a nondescript daycare center, the Julio Carballo playing fields, the St. Ignatius monastery, and Spofford Prison.

Thanks to the participation of Ninfa Segarra, who was deputy mayor during the project and comes from the area, the community center moved forward on a fast track, taking just seven months to build and two years from design to completion. Segarra was also the person who pushed to include arts spaces in the program, along with ones for sports and recreation.



EXPLODED ISOMETRIC

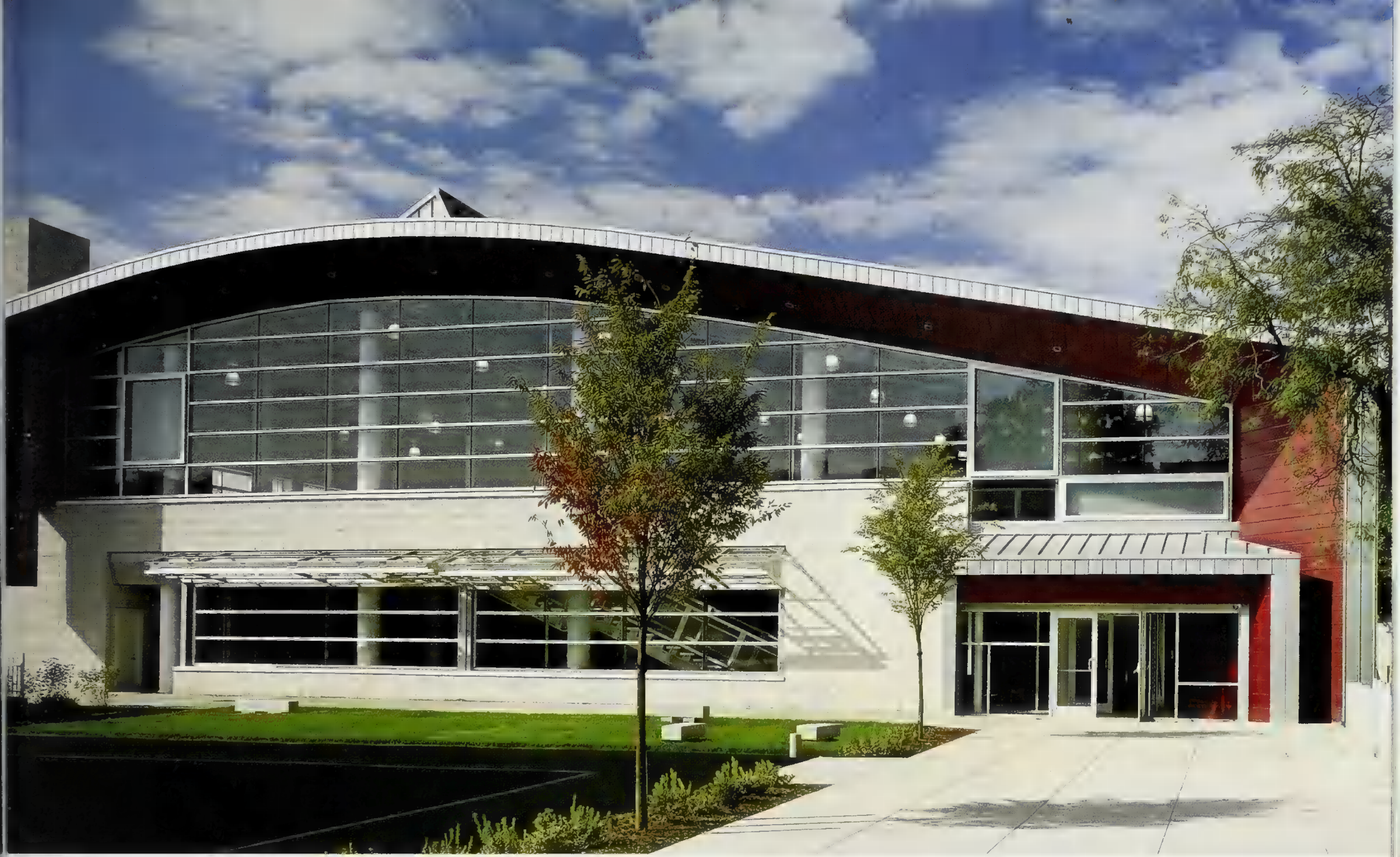
Solution:

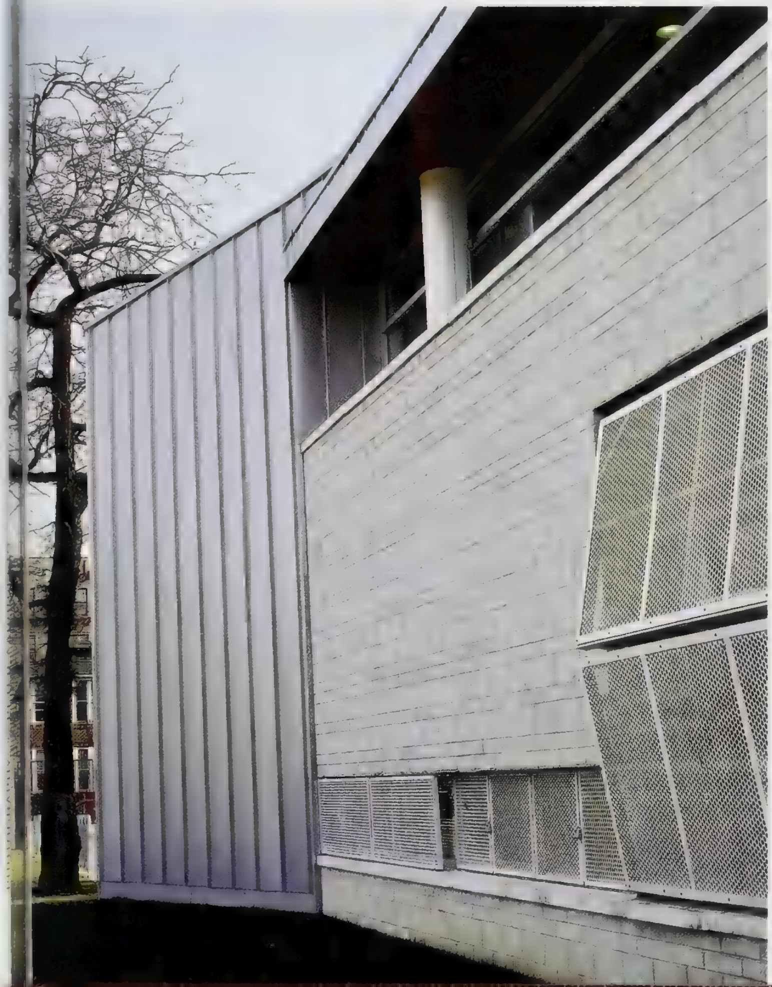
The speed of the project, combined with the limited capabilities of public contractors, set parameters for the architects. "You need to make your moves big and keep things fairly loose," says Tom Hanrahan, AIA, one of the partners at Hanrahan + Meyers Architects. He and his partner, Victoria Meyers, AIA, designed a great curving roof to grab attention and recessed the east-facing entry facade 5 feet under the roof to give the building depth and protect it from the morning sun. At the same time, the architects kept the detailing simple and approached the building as a series of separate systems (structural, cladding, interiors) that work together without necessarily aligning perfectly. "You have to paint with broad brush strokes on a city project like this," says Hanrahan.

Set on a 100-foot-square piece of land carved from the featureless city park that includes the Julio Carballo fields, the community center needed to establish a secure and inviting presence. "We wanted to give the building a soft, sculptural character," says Meyers. "We even looked at Ronchamp," she notes, recognizing in her voice the gap some observers might see between a recreation center and Le Corbusier's great pilgrimage church.

While the client wanted to limit glazing on the ground floor for security reasons, Hanrahan and Meyers showed they could incorporate long

PHOTOGRAPHY: © PETER AARON/ESTO





Bi-fold hangar doors on the main facade (above) and the side facing the playing fields (below and left) protect windows. When open, the perforated-metal doors act as a window canopy. Sandblasted concrete block echoes the gray stone of a nearby monastery.

windows on the east and north facades (facing the street and playing fields) by using airplane-hangar doors that protect the fenestration at night but slide up and open during the day. The hangar doors are made of perforated metal so the interior can glow in the evening, and they fold in two sections to form a window canopy when the sun is out. To reduce solar loads and block views of the prison next-door, the architects wrapped the south and west sides of the building with mostly windowless mechanical and service areas.

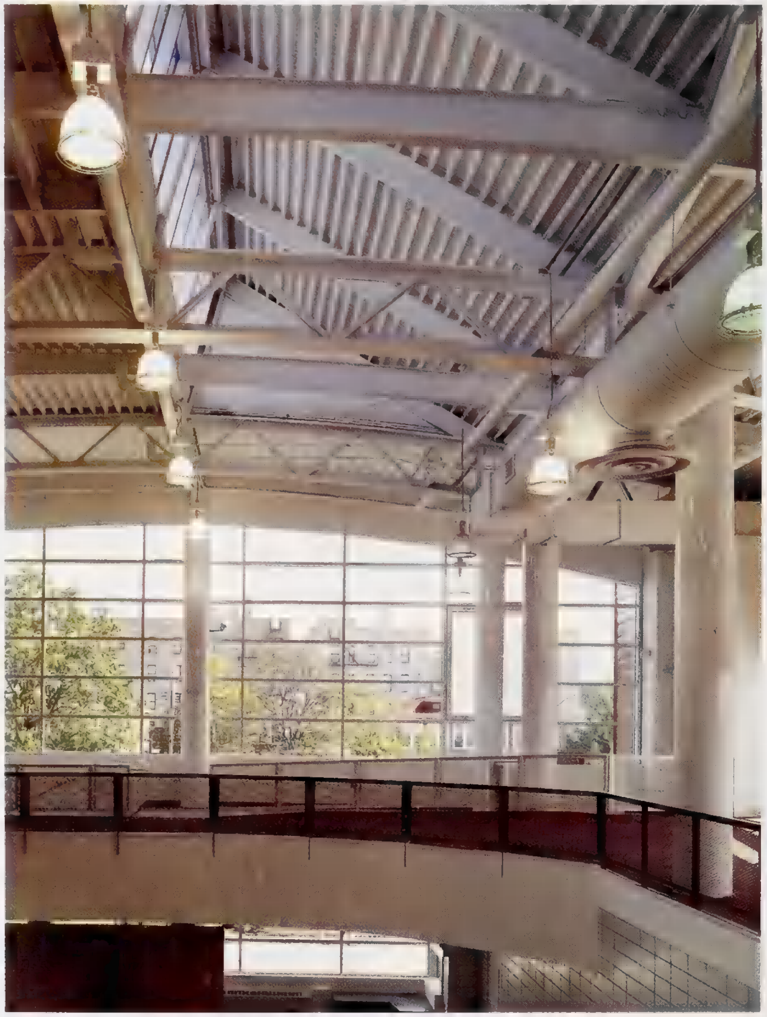
The main floor of the building accommodates most of the center's activities, including a classroom with computers, a small fitness room, rest rooms, and a gym with a stage on one side. The second floor, which is surrounded by large areas of glass on three sides, is mostly a running track around the gym below. Two north-facing skylights bring daylight deep into the building and serve as sculptural elements inserted in the roof. "The idea was to make the running track float in the space," explains Meyers. The architects had hoped to include a soft "pillowlike" ceiling above the gym, but the city rebid the project against their advice and it came in higher the second time, forcing them to eliminate the ceiling and expose the roof from inside.

Structurally, the building combines a steel frame with concrete-block walls. Finishes such as terrazzo flooring in the lobby and ground-faced concrete block were selected for durability and ease of maintenance.

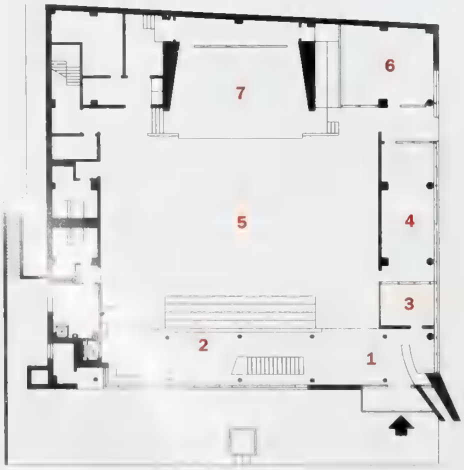
Commentary

The Hunts Point Community Center is a building with attitude—tough on the outside, soft on the inside. "This community really needed a place like this, needed it years ago," states Fernando Rosa, the manager of the center. "This place is a home away from home for a lot of kids from broken families," he adds. And it's clear from the lack of graffiti that the neighborhood as a whole has welcomed the facility. ■

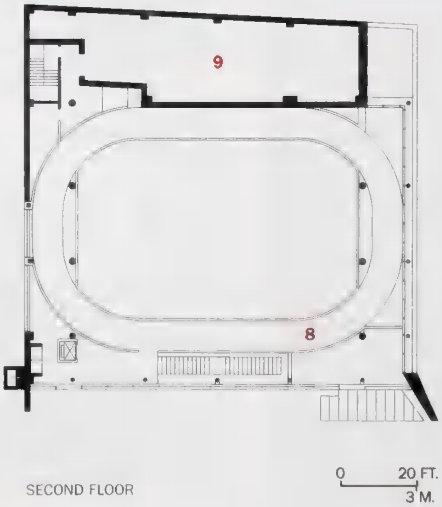
The architects kept fencing around the site to a minimum (above). "We wanted a building in a park, not a building in a cage," says Hanrahan. Though the roof and skylights were the most complex part of the structure, standardized roof trusses helped simplify it.



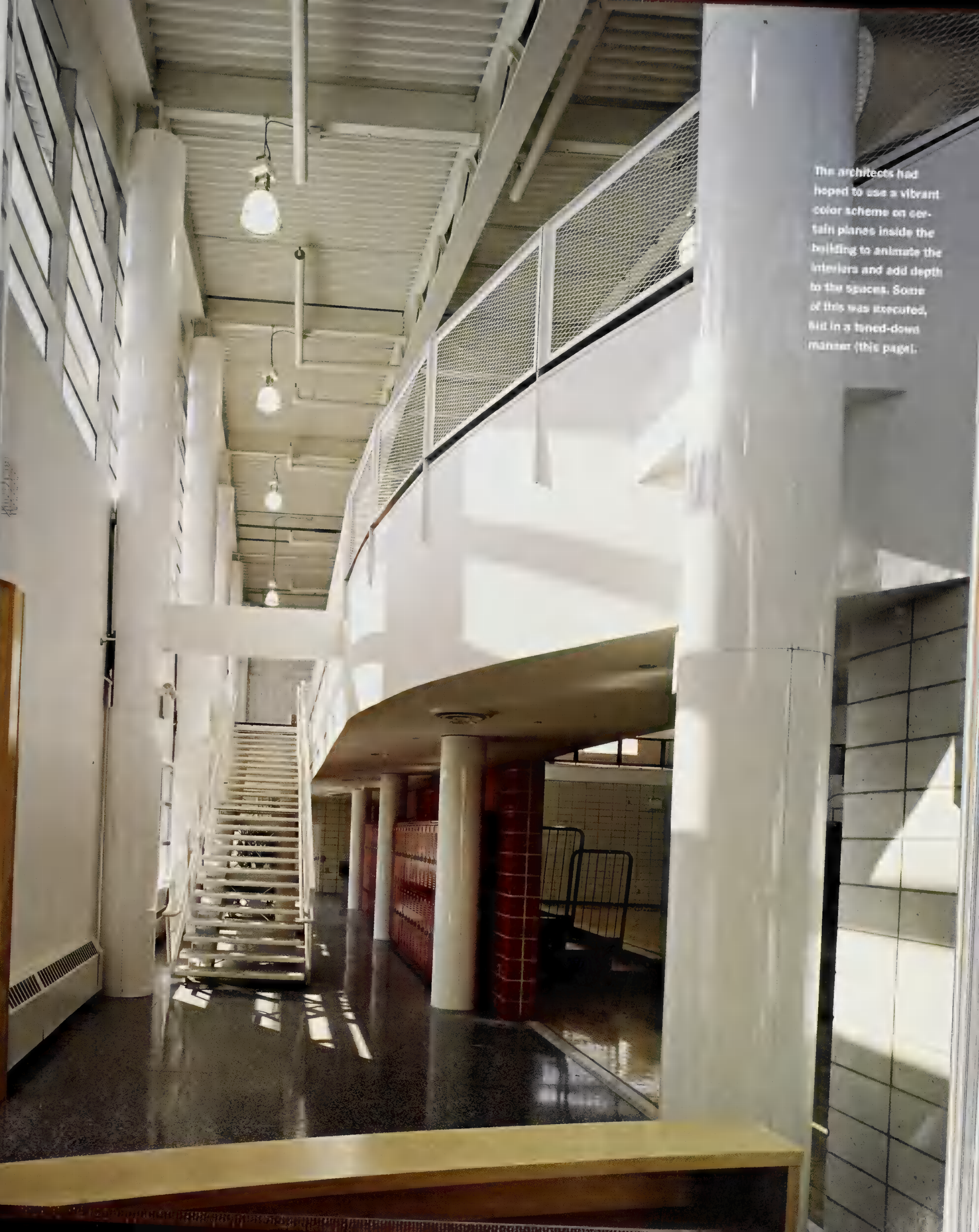
1. *Reception*
2. *Lockers*
3. *Office*
4. *Classroom*
5. *Gym/auditorium*
6. *Fitness*
7. *Stage*
8. *Track*
9. *Mechanical*



FIRST FLOOR



SECOND FLOOR



The architects had hoped to use a vibrant color scheme on certain planes inside the building to animate the interiors and add depth to the spaces. Some of this was executed, but in a toned-down manner (this page).

Coal Harbour Community Center

Vancouver, British Columbia

3

HENRIQUEZ PARTNERS TUCKS A RECREATION AND SOCIAL CENTER UNDER A PARK TO PRESERVE EXPENSIVE VIEWS OF WATER AND MOUNTAINS.

By Sheri Olson, AIA

Architect: *Henriquez Partners Architects—Gregory Henriquez, AIA, design partner; Shawn Strasman, Fred Markowsky, Yijin Wen, Jaime Dejo, Frank Stebner, project team*
Client: *Marathon Developments*
Owner: *City of Vancouver, Board of Parks and Recreation*
Engineers: *CY Loh & Associates (structural); Stantec (mechanical); Arnold Nemetz & Associates (electrical)*
Landscape architect: *Philips Wuori Long*
General contractor: *Darwin Construction*

Size: *85,000 square feet*
Cost: *$10 million*

Sources
Liquid applied roofing membrane: *Monsey Bakor*
Anodized aluminum windows, skylights, exterior doors: *Kawneer*
Exterior feature lighting: *Rebelle Architectural Lighting, "Orchestra"*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

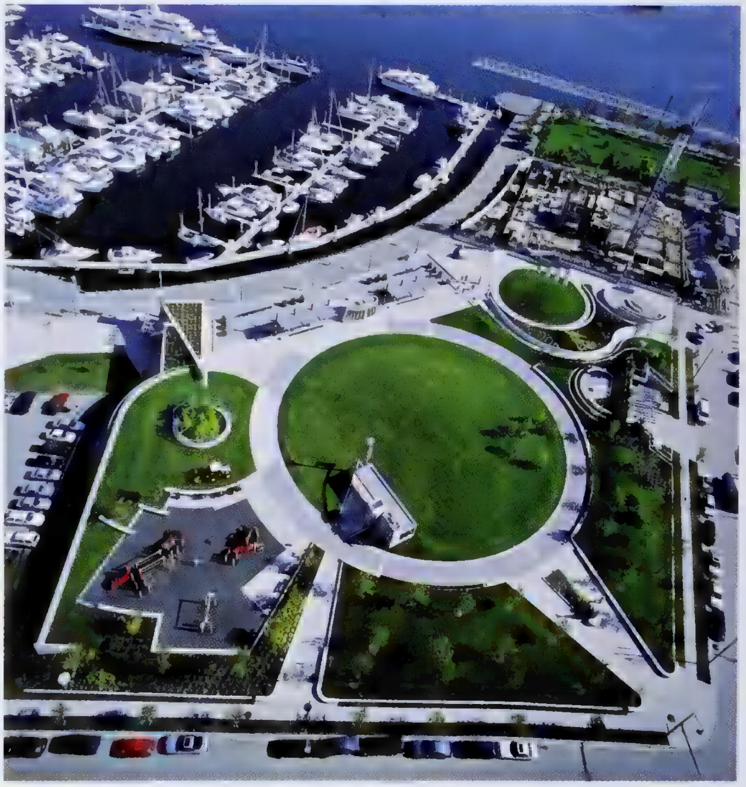
Program

Like a half-hidden submarine, the Coal Harbour Community Center on Vancouver's Burrard Inlet breaks the grassy surface of a waterfront park, emerging in a sleek skylight that resembles a glass conning tower. Its posh address (on some of the most expensive property in North America) forced the project underground to preserve the spectacular water and mountain views enjoyed by residents in nearby luxury towers.

The Coal Harbour development is transforming what had until recently been train yards at the end of the Trans-Canadian railroad into a community that will eventually comprise 5,000 people in 15 towers on 57 acres. Several apartment towers have already been built, and plans call for a school, a day-care center, and more housing.

Aggressive planning efforts to entice people back downtown require developers in Vancouver to pay for a portion of public amenities, such as community centers. "It's the third places—outside home and workplace—that create a neighborhood," says Larry Beasley, codirector of planning for the city of Vancouver.

The result is a recent crop of boutique community centers tailored to specific neighborhood needs. Coal Harbour's cappuccino bar and mirror-lined dance studio serve its leisure-oriented users. It also fills needs not addressed by other community facilities in the area, providing, for example, one of the largest gyms downtown and a spacious, multipurpose room overlooking the marina that is already booked three years in advance for weddings.



Solutions

The architects exploited the shoreline topography by slipping the project into a 16-foot grade change between the park and sea level. Pristine poured-in-place concrete (the happy result of a strong tradition in British Columbia) serves both as infrastructure and enclosure, tying the project together. For example, what starts as a bench-height wall in the park winds its way down the site to become a concrete frame around a glass facade along the seawall promenade. "Our goal was to blur the line between building and landscape," says Gregory Henriquez, AIA, the design partner in charge of the project.

Contributing editor Sheri Olson, AIA, is the author of Miller/Hull, *published by Princeton Architectural Press.*

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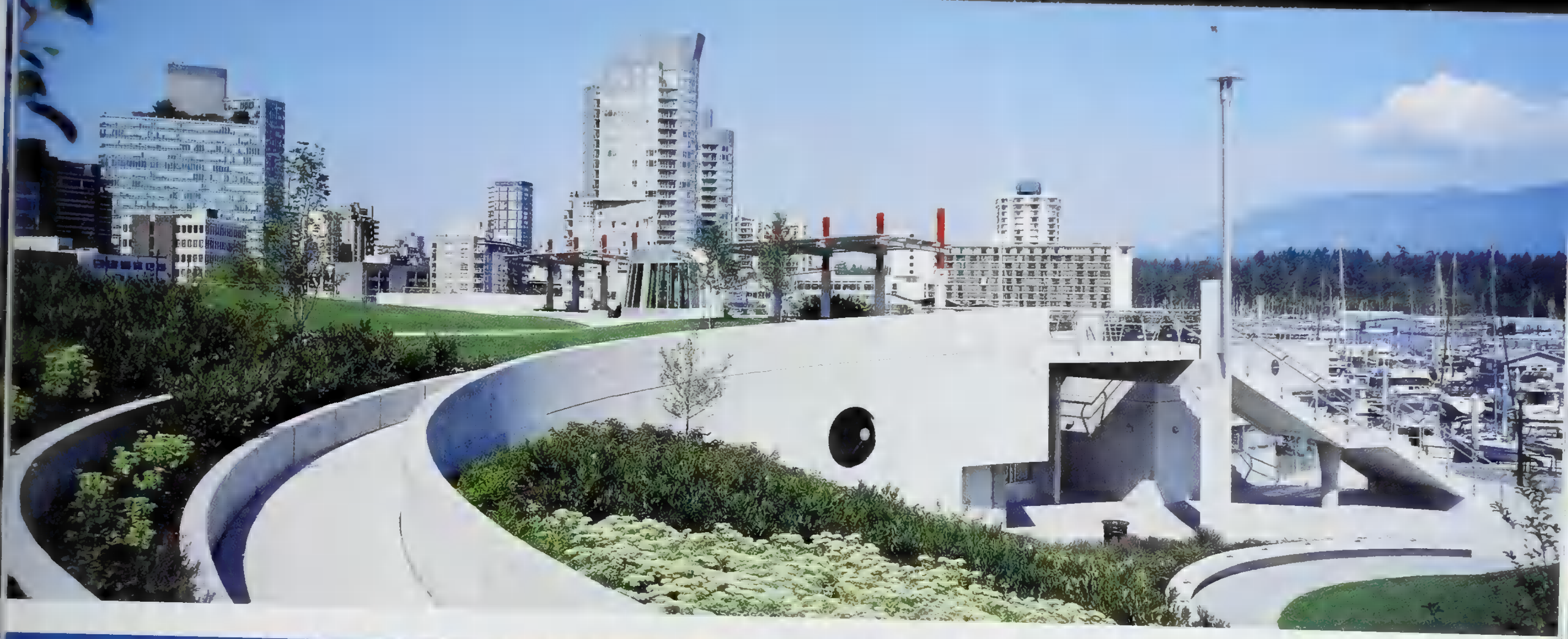
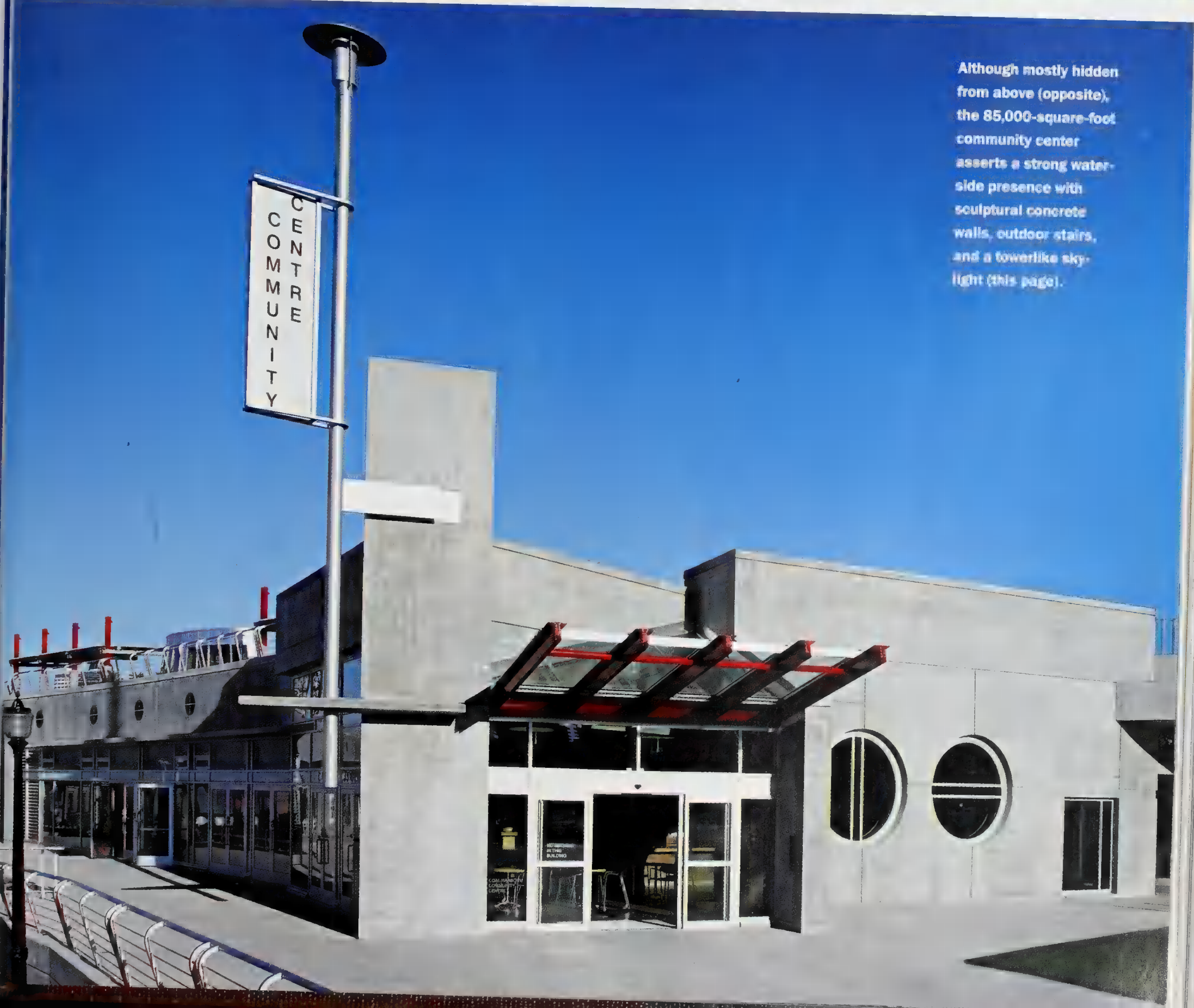
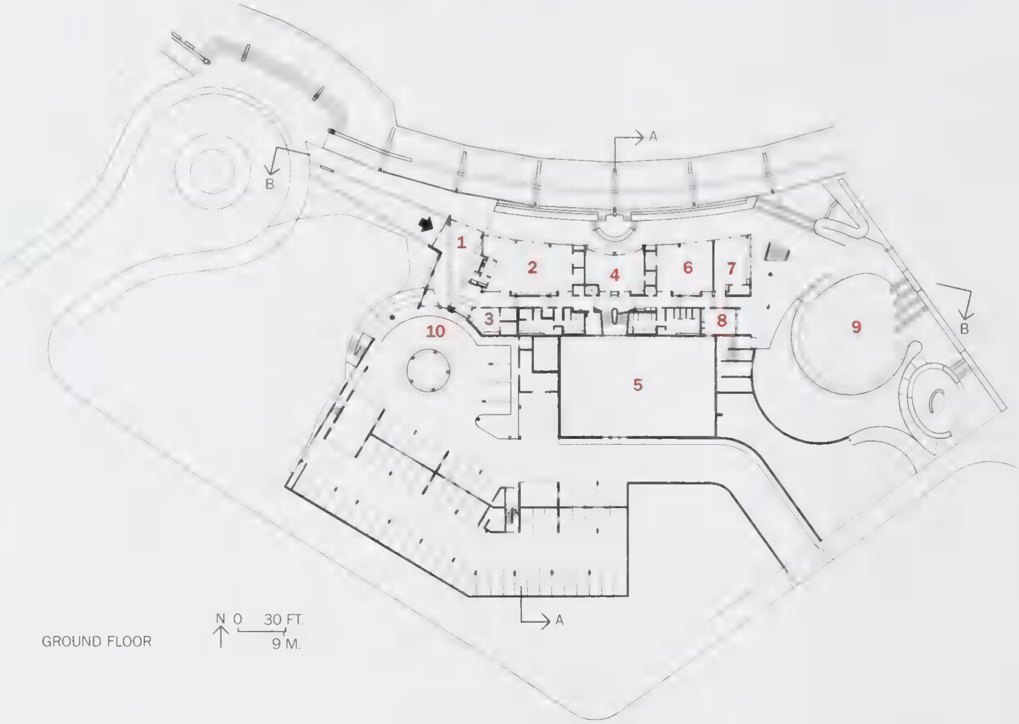




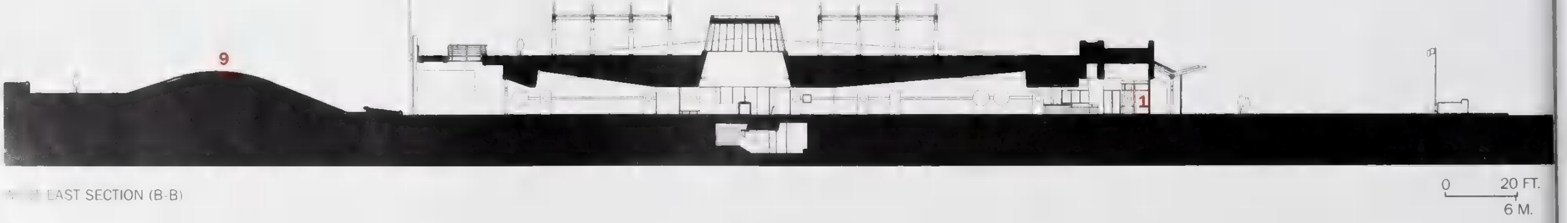
Although mostly hidden from above (opposite), the 85,000-square-foot community center asserts a strong waterside presence with sculptural concrete walls, outdoor stairs, and a towerlike skylight (this page).



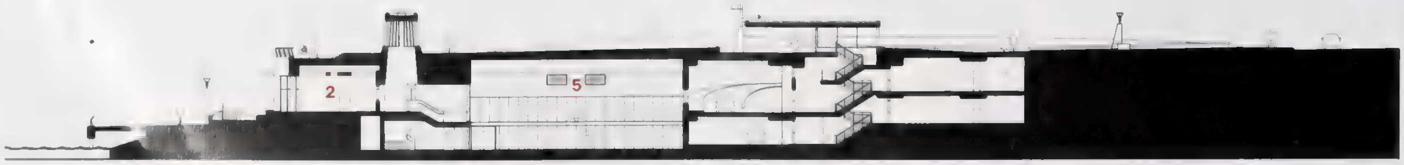
GROUND FLOOR

Light-topped masts and brightly painted steel posts call attention to access points and key elements of the project (above left and right). The distinctive form of the conning tower/skylight reads both above and below ground (above right and opposite, top), so it can serve as a navigational landmark for visitors. The facility provides the community with resources such as a large gym (opposite, bottom left) and a café (opposite, bottom right).

1. *Lobby*
2. *Multipurpose*
3. *Office*
4. *Youth lounge*
5. *Gymnasium*
6. *Dance*
7. *Crafts*
8. *Meeting*
9. *Amphitheater*
10. *Drop-off*



[illegible] EAST SECTION (B-B)



NORTH-SOUTH SECTION (A-A)

Topside, a concrete path circles a grassy hill, unifying the irregularly shaped, five-acre park and adding visual interest to the birds-eye view from the tower. Built on 12,000 piles on dredge-and-fill land, the project uses the covering weight of the earth to help keep the structure in place in the event of an earthquake.

While the facility is tucked under grass, three mastlike beacons identify the building entrances and light the entire site. The nautical reference represents the architects' abstract interpretation of the surrounding ships, seaplanes, and docks.

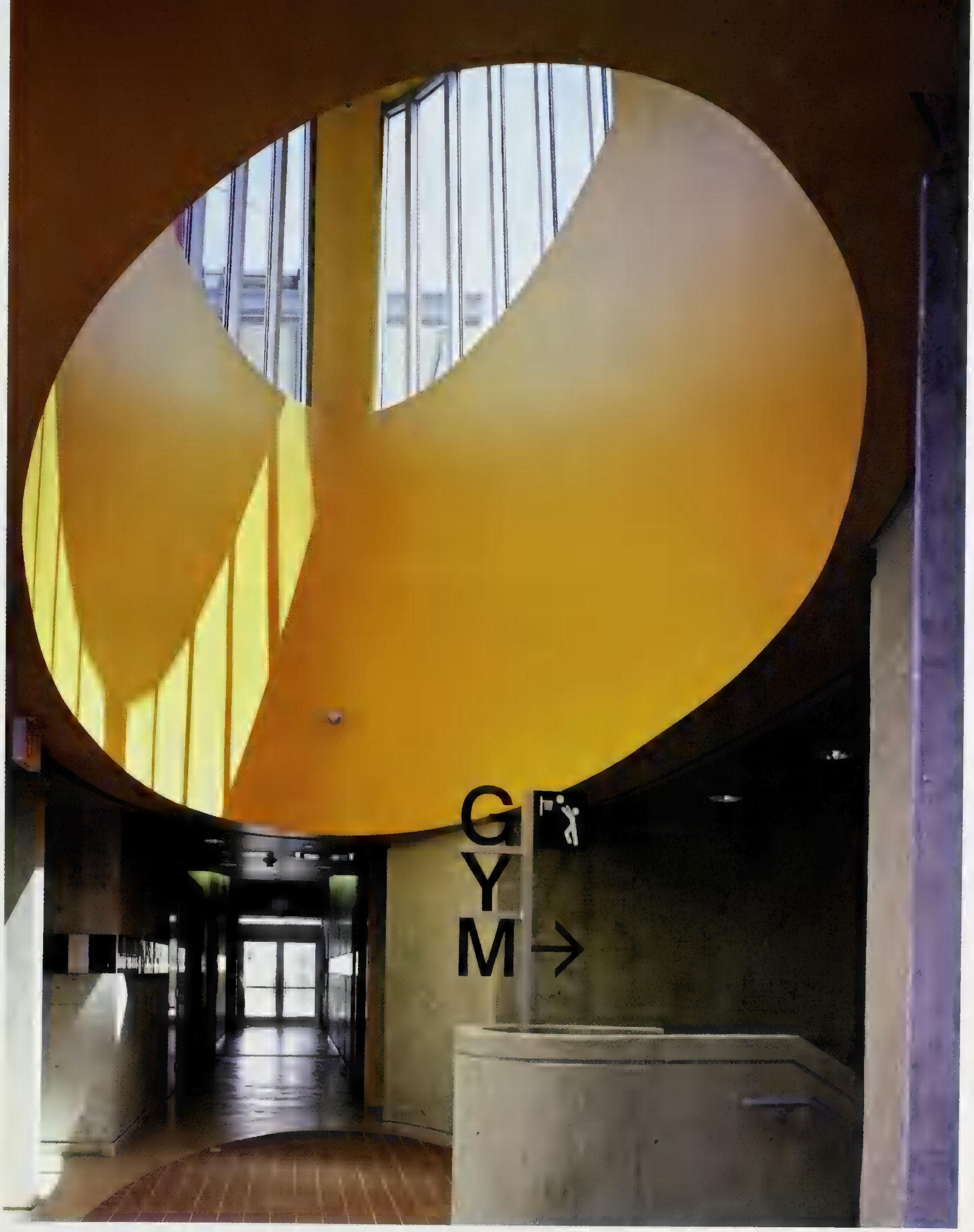
Visitors arriving by car can be dropped off at a large circular area punctuated by a light well with a stand of bamboo growing up through its center from the garage below. From the garage or the waterfront, visitors enter a main lobby activated by a coffee bar with large windows facing the marina.

Although a double-loaded corridor runs the length of the project, the architects enlivened it with oversize portholes that borrow daylight from waterside spaces, transom windows, and sidelights around doors. The long, lineal space recalls a submarine hull, and a large oval skylight painted a sunny Peter Max yellow floods the interior with light while bringing a certain Beatles song to mind.

Commentary

Though complex in plan and section, the project is easy to navigate due to a series of architectural events. The conning tower, for example, is legible above and below ground, so it can serve as an orientation device while also demonstrating a sophisticated wit. The architects' abstract and episodic approach to the nautical theme is cohesive, not cloying.

The matter-of-fact handling of the constructed character of the site—no romanticized views of nature here, thank you—creates a particularly urban park and an unusually fluid building that incorporates both architecture and landscape. ■



Heritage Park Community Center

Chula Vista, California

4

IN A BUILDING FOR A NEW SUBURBAN COMMUNITY, ROB WELLINGTON QUIGLEY RECALLS CALIFORNIA'S HERITAGE OF SIMPLE AGRICULTURAL SHEDS.

By Alice Kimm

Architect: *Rob Wellington Quigley, FAIA—Rob Wellington Quigley, FAIA, partner; Bob Dickens, project architect; Katy Hamilton, project manager*
Owners: *The Otay Ranch Company and the City of Chula Vista*
Consultants: *Flores Lund Consultants (structural engineer); Burton Associates (landscape); Randall Lamb Associates (lighting)*
General contractor: *Erickson Hall Construction Company*

Size: *6,000 square feet*
Cost: *$1.3 million*

Sources
Metalwork: *Aztec Sheet Metal*
Glazing: *Moonlight Glass*

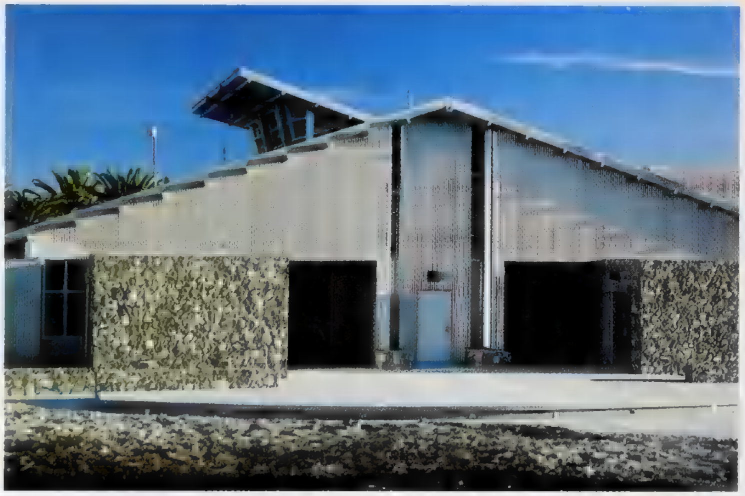
WWW For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

Program

In some respects, the new residential development of Heritage Park typifies suburban sprawl: 1,314 merchant-built, single-family houses and 1,566 multifamily units that continue San Diego's relentless push south to the Mexican border. However, its master plan, designed by landscape architects Burton Associates, breaks with some of sprawl's conventions—devoting a large percentage of its 620 acres to landscaping, including a 120-acre park, or "village core." It even envisions a future light-rail transit system that will reach into every corner of the development.

"Tentacles of a green infrastructure reach into each of the residential clusters," says Rob Wellington Quigley, FAIA, who designed the 6,000-square-foot community center that anchors the village core. Conceived as a place for arts and recreation, the village park also includes playing fields, an elementary school, and a Quigley-designed aquatic center. The community center, though, is the heart of this new landscape.

The program for the $1.3 million facility is relatively generic: a large meeting room divisible into two, a crafts room connected to a secure courtyard, a kitchen, and an outdoor amphitheater.



PHOTOGRAPHY: © BRIGHTON NOING

Solution

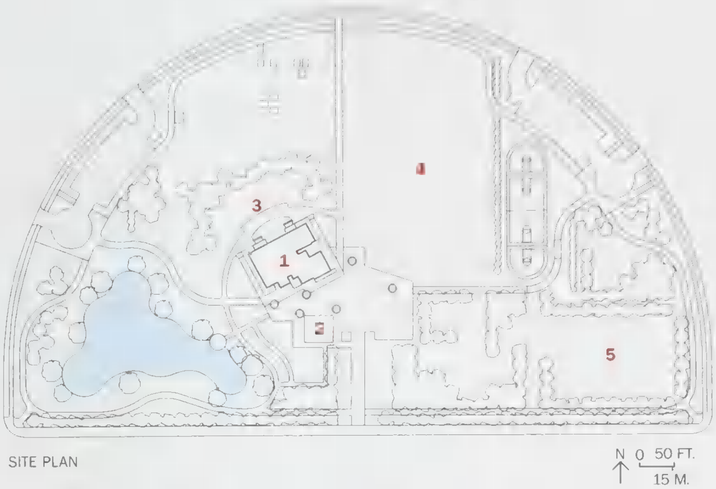
In form, the community center breaks significantly from the designs found in the rest of the development. The building's large pitched roofs and low-slung profile make reference to the barnlike "agricultural sheds" that formerly dotted this site. "Burton Associates generated a rural theme for the building," Quigley explains. "While we didn't actually save any of the existing rural shed buildings, we were inspired by them."

Quigley says the community center is "meant to be a simple and straightforward building." Simple it is. The main spaces—a large meeting room and a crafts room—flank a hallway, or "gallery," which leads to the outdoor amphitheater and park. A courtyard for ceramics provides a gated outdoor space adjacent to the crafts room. Storage spaces and rest rooms form a thick poché along the perimeter of the building.

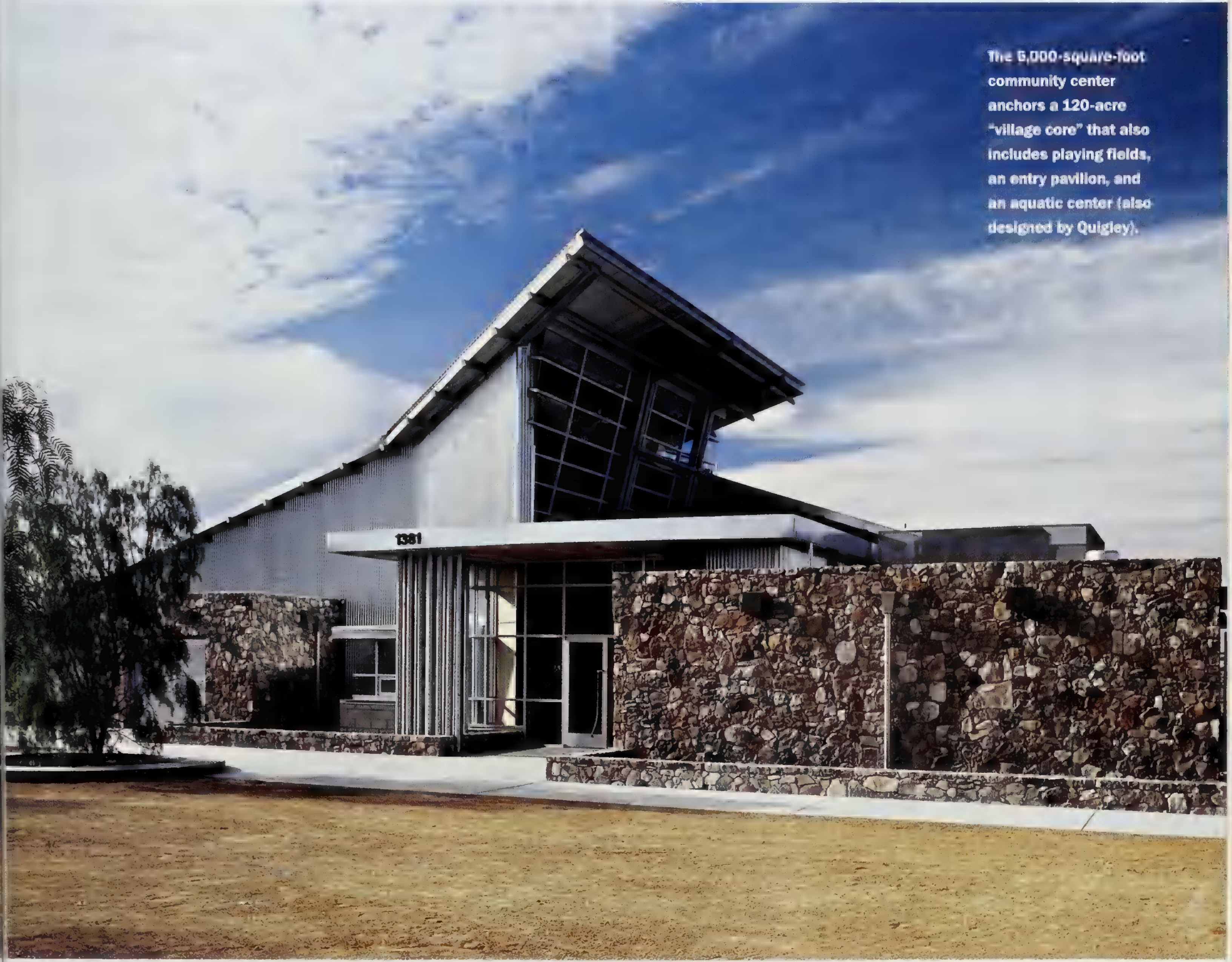
The building is most interesting in section. Its form, according to Quigley, can be likened to "a barn with the corner over the entry and gallery lifted up to let in clerestory light." Daylight floods the gallery and penetrates the meeting and craft rooms through large, angled clerestory windows. So the interiors are enlivened by the play of light spilling from above. However, there are, curiously, few other openings connecting interior spaces with the exterior.

Quigley kept his palette, like his forms, simple and straightforward. He exposed the building's steel trusses and posts and clad much of the structure in corrugated

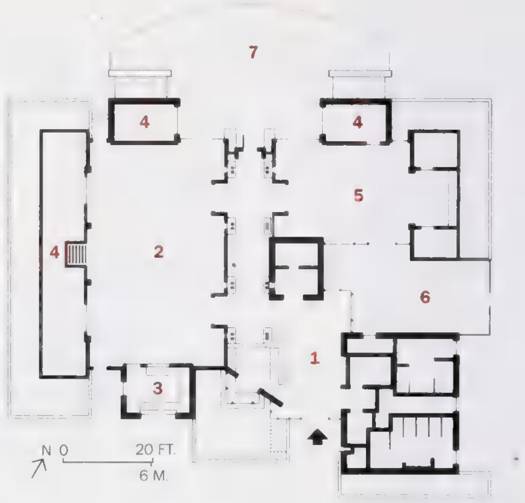
Alice Kimm is an architect in Los Angeles and an occasional contributor to ARCHITECTURAL RECORD.



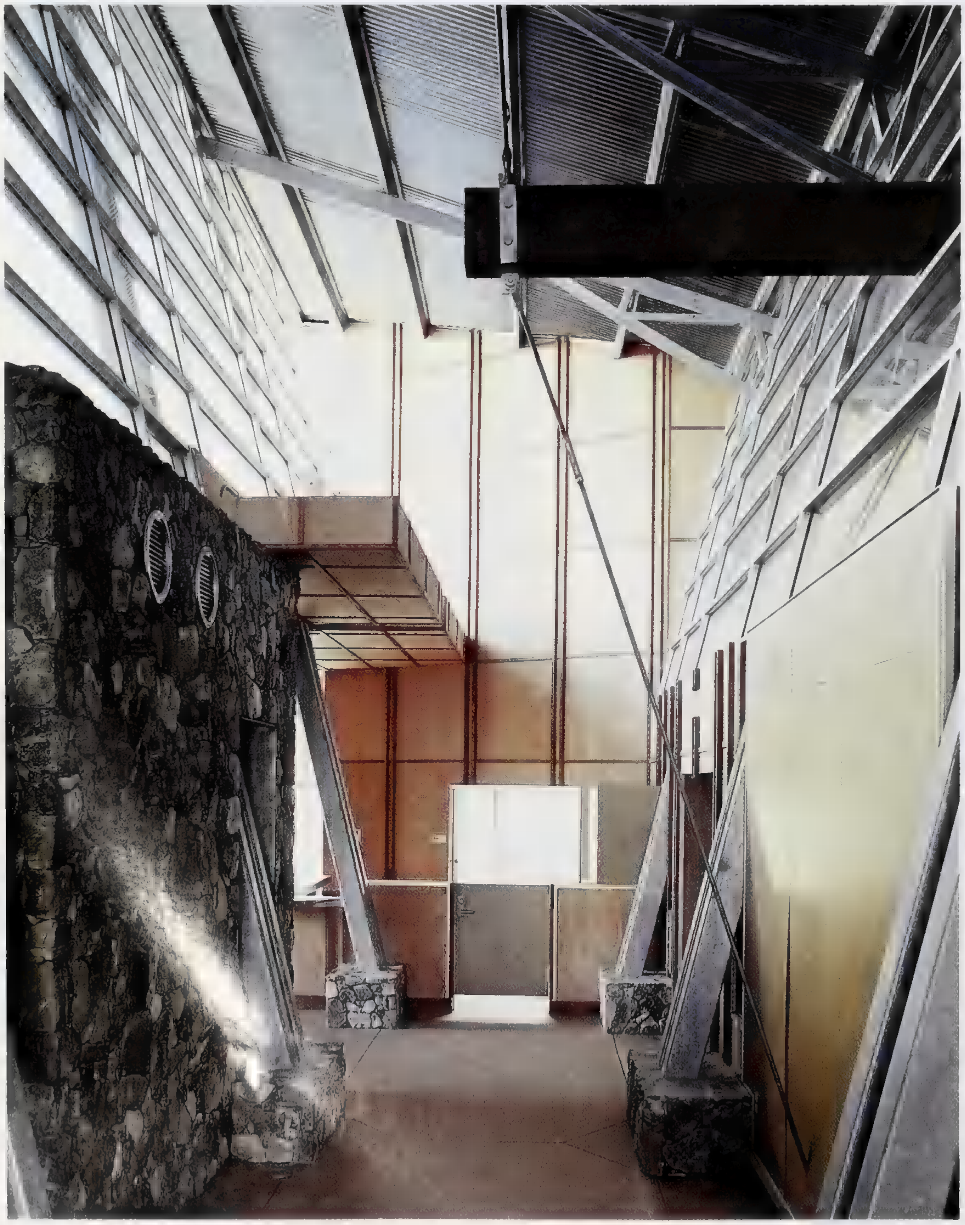
1. *Community center*
2. *Pavilion*
3. *Amphitheater*
4. *Playing fields*
5. *Aquatic center*



The 6,000-square-foot community center anchors a 120-acre "village core" that also includes playing fields, an entry pavilion, and an aquatic center (also designed by Quigley).



1. *Lobby*
2. *Meeting*
3. *Kitchen*
4. *Storage*
5. *Crafts*
6. *Courtyard*
7. *Stage*



Quigley used a combination of materials, such as rough stone, plywood, and concrete, to give the building the feeling of a modern agricultural shed. In the main corridor, or "gallery" (left), most daylight comes from clerestory windows.

galvanized sheet metal reminiscent of agricultural sheds. He also used concrete block and the same rough, brownish stone found throughout the Heritage Park development. Inside the community center, the architect surfaced walls, the entry ceiling, and the reception desk with Douglas fir plywood, while specifying vinyl-tile flooring for the large meeting room and colored concrete for floors elsewhere.

The building boasts some clever details: stone bases for the gallery's structural steel posts that double as seating elements; an L-shaped screen of steel tubes on one side of the front entry that hides a security fence; and rough stone planters in front of the building that discourage skateboarders.

Commentary

In a context of suburban sprawl where wood-frame, stucco houses predominate, Quigley's community center provides a positive formal counterpoint. But given its public program and green setting, the building has a puzzling relationship with the outdoors—offering less contact between inside and out than one would expect.

While it brings plenty of daylight inside, the building provides few visual or spatial connections back to the park. Roll-up doors open the meeting and craft rooms to the outdoor amphitheater but account for only part of each room's short side. Thus the carefully coiffed and abundant landscape, which arguably sets this suburban development apart from most others, has little impact on people inside the community center. Quigley cites security concerns and the internalized nature of many activities taking place at the center as justifications for limiting connections between indoors and out.

Though attractive by itself, the building raises questions about the give-and-take between the need for security and privacy and the desire for transparency and openness. These issues are worth pondering, even in the context of a generic suburban development—indeed, *especially* in such a place. ■

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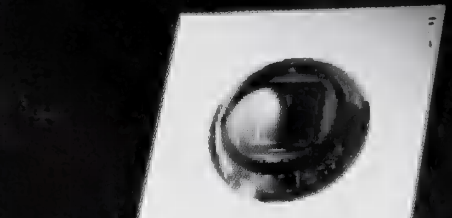

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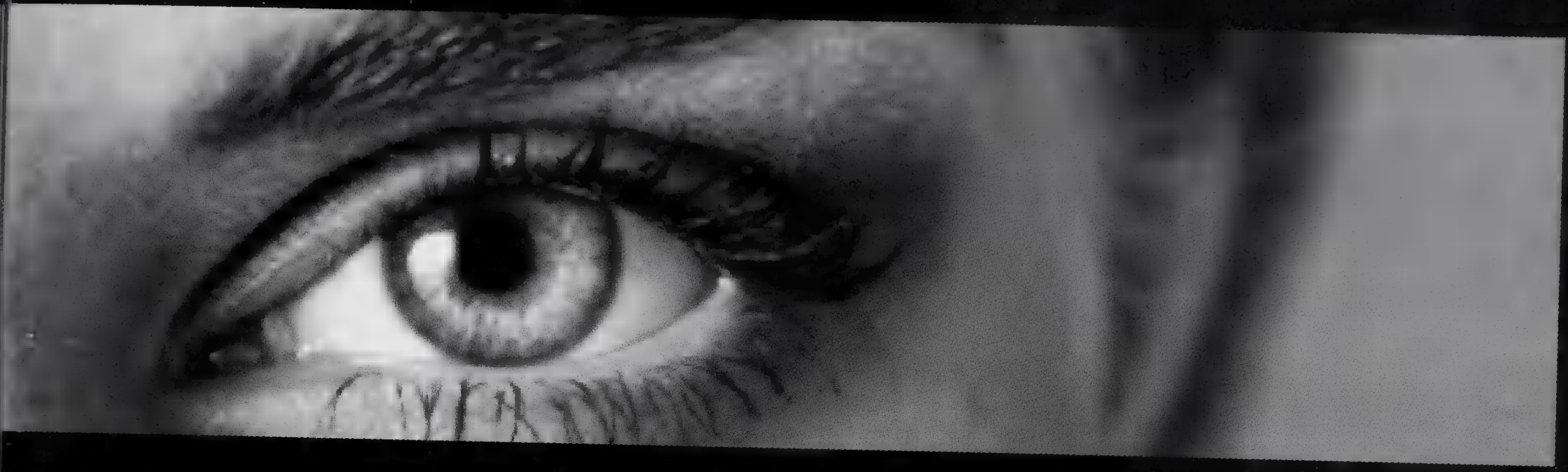

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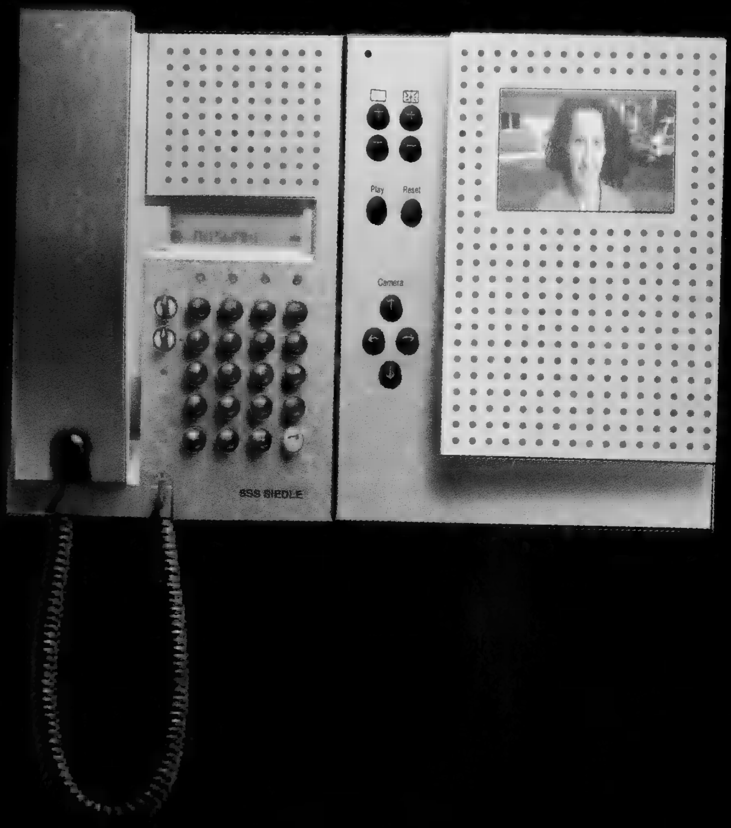

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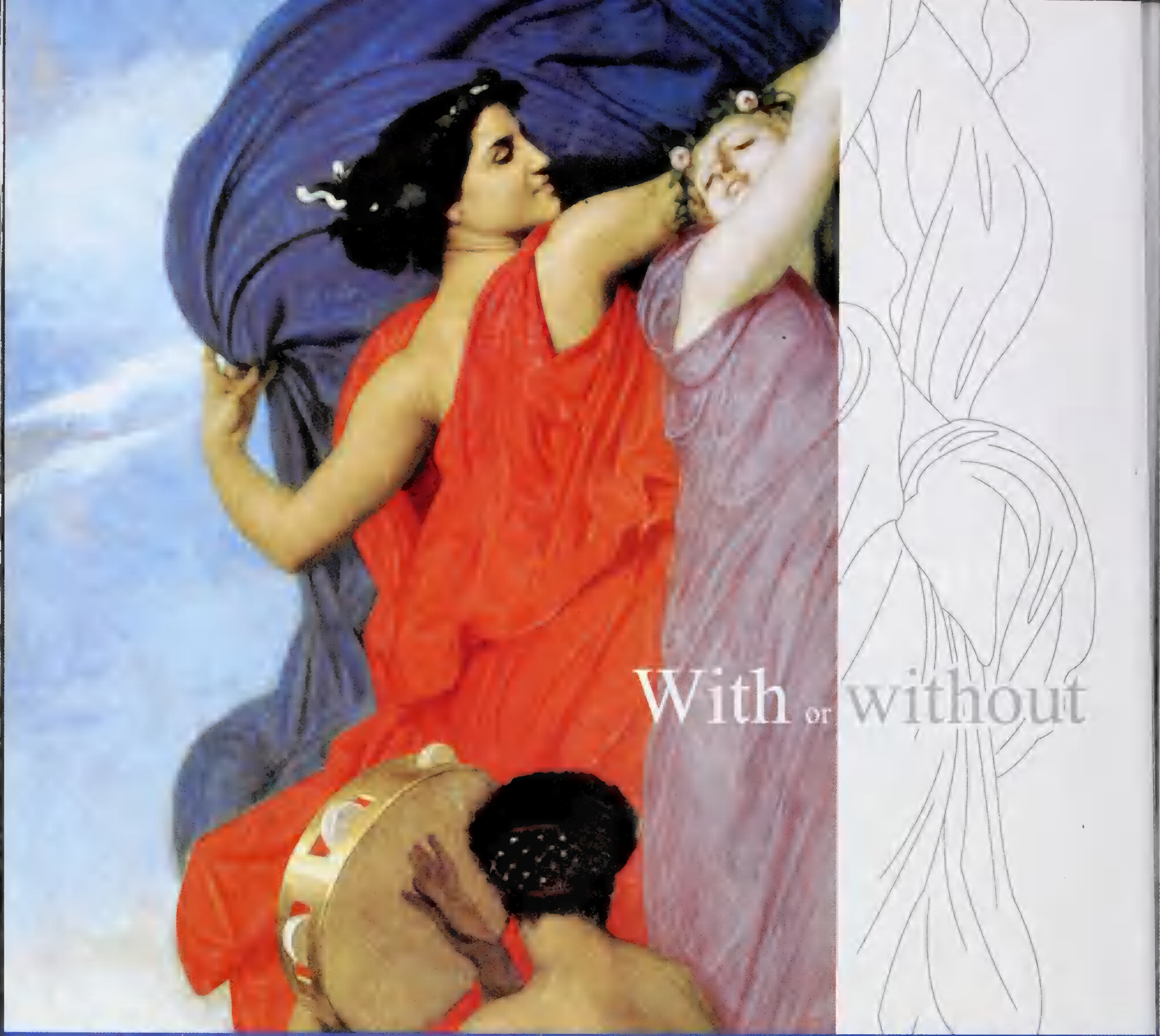

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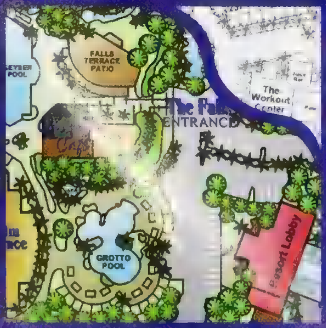

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In the aftermath of September 11, the urban landscape appears vulnerable and random

ARCHITECTS AND CONSULTANTS FOCUS ON RISK ASSESSMENT AND SECURITY THROUGH DESIGN

By Sara Hart

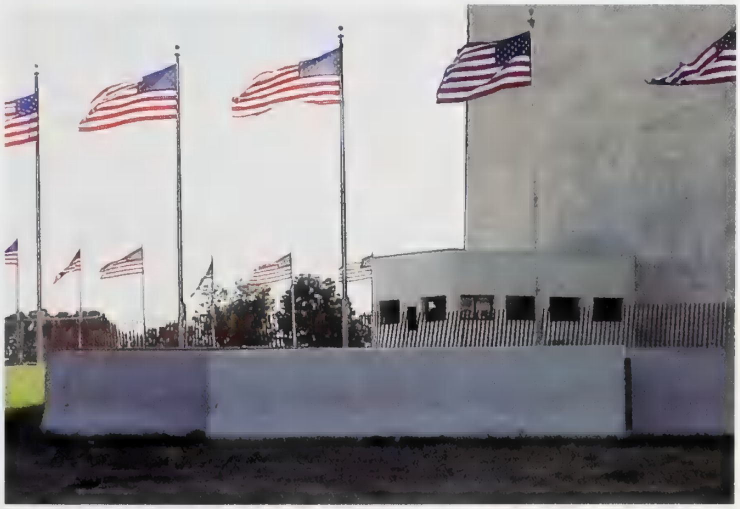
It is now a symbol of vulnerability as well as a safeguard. Commonly known as the Jersey barrier, because it was first used on the New Jersey turnpike in the 1950s to prevent out of control vehicles from careening into oncoming traffic, it is a continuous, partially tapered reinforced concrete wall that blends innocuously into the gray, multilane freeways that it divides. Weighing in at approximately 600 pounds per linear foot, it performs well.

Taken out of context, however, and deposited onto sidewalks and into public plazas, the portable version of the Jersey barrier is an eyesore, its design the basest application of form following function. Since the devastation of the World Trade Center, an attack mainly against civilians rather than federal or military personnel, portable barriers have been increasingly scattered coast to coast, decorating the entrances and perimeters of many office buildings and nongovernmental institutions and facilities. Their presence is obviously an improvised security solution, visual corroboration that we are unprepared for violent assaults on our buildings and open public spaces.

In no place are the barriers more ubiquitous than in Washington, D.C., where they started appearing in the 1970s and have steadily multiplied. With terrorist attacks on U.S. interests abroad, the 1993 bombing of the World Trade Center, and the destruction of the Alfred P. Murrah Federal Building in Oklahoma City in 1995, more layers of barriers have been added, until now they are so pervasive that they make the nation's capital appear to be permanently under siege.

The mantra: Openness

In the aftermath of September 11, the design community sought to stave off a panic that many feared would not only make the Jersey barrier an architectural icon but trigger an avalanche of draconian regulations that would turn buildings into bunkers and stifle creativity in the arena of civic architecture. Anxiety began before the destruction of the World Trade Center and a large portion of the Pentagon, and several sectors of the design professions teamed with bureaucrats to conduct studies, which yielded volumes of enlightened recommendations.



Jersey barriers have been an eyesore around the Washington Monument since 1998. New landscaping and a visitor center promise to restore its intended dignity.

On November 30, 1999, the General Services Administration (GSA) and the U.S. Department of State, in cooperation with the American Institute of Architects (AIA), convened in Washington to debate the effects of terrorism on the country's public buildings at a symposium called "Balancing Security and Openness." An impassioned speech by then New York senator Daniel Patrick Moynihan eloquently summarized what most architects and many officials believe is the only appropriate guiding principle: "Architecture is inescapably a political art, and it reports faithfully for ages to come what the political values of a particular age were. Surely ours must be openness and fearlessness in the face of those who hide in darkness. Precaution, Yes. Sequester, No."

Differentiating between risk and fear

Open yet secure. Accessible yet defensible. These are seemingly mutually exclusive demands. The GSA subsequently published a summary of the event in which a consensus is clearly and adamantly outlined. "Security should be designed to meet reasonable rather than rare catastrophic threats." Inspired by this apparent consensus, the event produced

CONTINUING EDUCATION

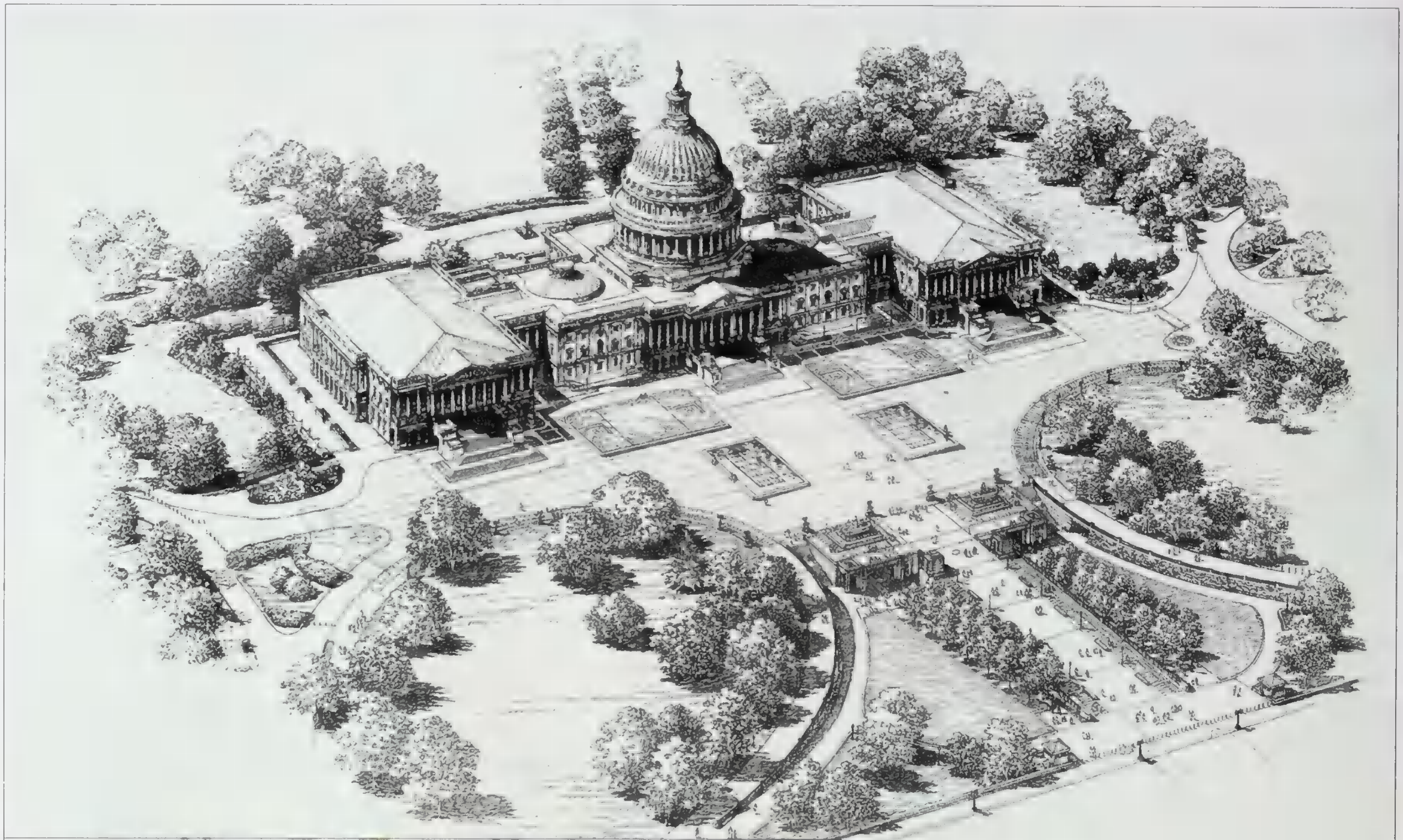
Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD*/AIA Continuing Education article. To receive credit, turn to page 226 and follow the instructions.*

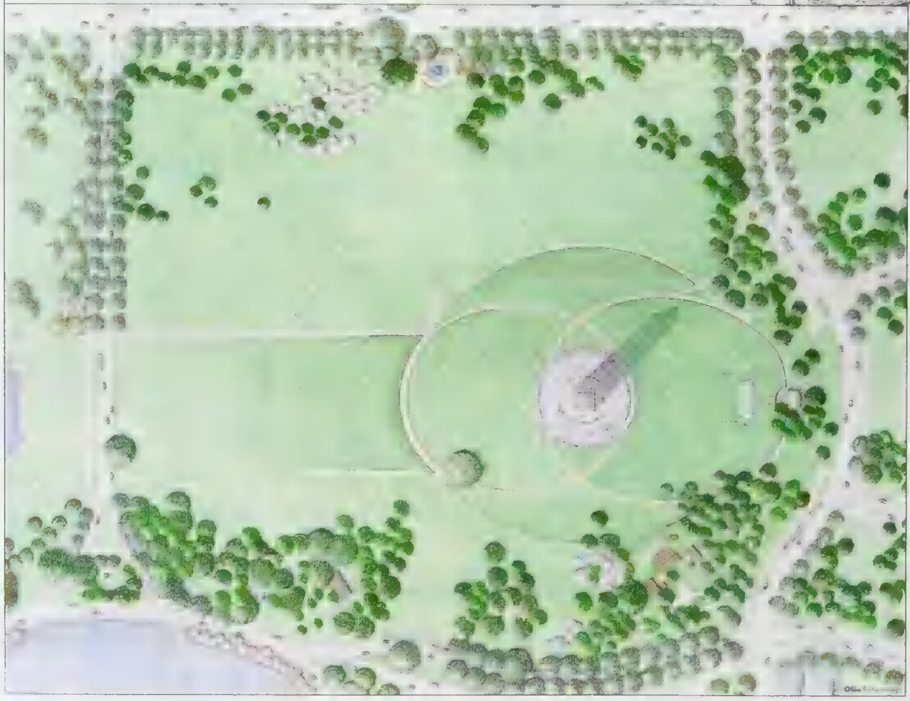
LEARNING OBJECTIVES

After reading "Fear Should Not Become a Form-Giver for Architecture," on page 55 of this issue, together with the article starting on this page, you should be able to:

1. *Discuss how public buildings can be open yet secure, and why.*
2. *Describe alternative ways to protect approaches to buildings rather than concrete barriers.*
3. *Explain how the Capitol Visitor Center will improve security of the Capitol.*

WWW For this story and more continuing education, as well as links to sources, white papers, and products, go to **architecturalrecord.com.**





Balancing security and design
The Olin Partnership has designed a series of sunken paths around the Washington Monument (above) that will guard against vehicles but maintain critical sight lines.

RTKL's design for an underground Capitol Visitor Center (top) will increase security and make it possible for the east plaza to be landscaped according to Frederick Law Olmsted's original plan.

several solid, commonsense considerations: siting and setbacks, materials selection, structural systems that resist progressive collapse, the ability to isolate high-security spaces, landscaped buffer zones, and stand-alone checkpoints.

Yet there still is no consensus on how to assess reasonable risk or credible threat. An architect can design for security to the absolute outer limits of building science and never achieve an impenetrable building (at least not one that anyone would want to inhabit). This is the reality check that Gavin de Becker, best-selling author and security consultant, chants relentlessly in his books and presentations. In that 1999 symposium in Washington, he appealed to his audience to create a workable definition of *safe*, one that means "free of unacceptable risk." He explains this at great length in his latest book, *Fear Less: Real Truth About Risk, Safety, and Security in a Time of Terrorism* (Little, Brown and Company).

In a recent issue of the Georgia Institute of Technology publication *Research Horizons*, Russell Gentry and Craig Zimring, who are architecture professors at the university, site three reasons why there's so much confusion about what constitutes reasonable risk. First, there is no national building policy regarding security, no building science equivalent to the Federal Aviation Administration, for instance. Instead, there are building codes and standards, which generally adapt to trends in the

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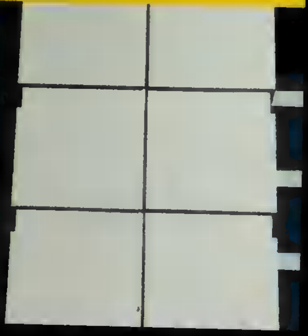

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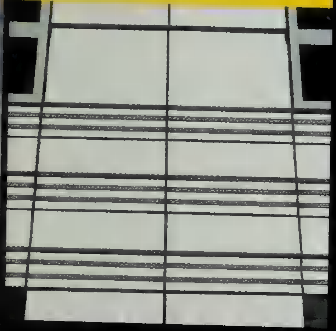

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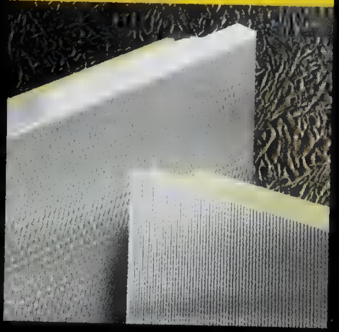

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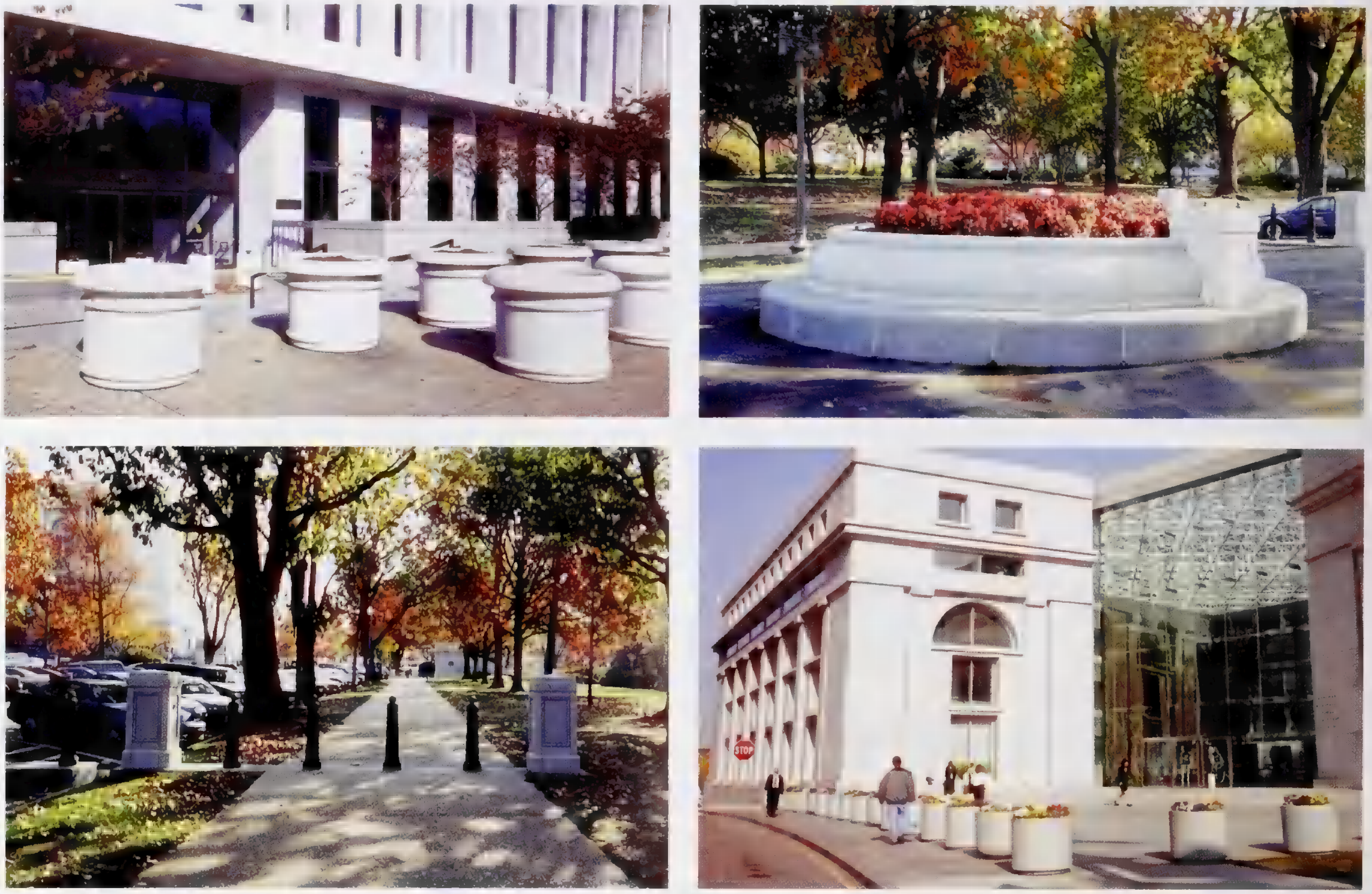

Alternatives to the Jersey barrier

EDAW is one of several design firms commissioned by the National Capital Planning Commission to develop a series of bollards, planters, street furnishings, and gatehouses around the Capitol Perimeter. The firm is also working on prototypes for designers to select from in future projects.

building industry rather than dictate policy.

Secondly, there are few sources of research funding at the federal level for building science. The National Science Foundation funds research about building systems but not architecture. This, they say, leads to the third problem. Whereas building codes focus on issues such as life safety, structural integrity, and egress, they do not address security, largely because there is no definition of a "credible threat."

Gentry and Zimring call for more federally sponsored research carried out as a cross-disciplinary endeavor called the "science of building vulnerability." In essence, research, regulation, and building systems and their operation would be examined in relation to each other in an effort to achieve consensus in the area of risk assessment.

"What might be needed is some oversight body, without regulatory authority, much like the National Transportation Safety Board (NTSB)," suggests Gentry. "The NTSB looks at transportation safety and identifies problems and suggests solutions, but does not usurp the authority of existing regulatory bodies."

Their proposal is a long way from becoming reality; however, similarly motivated efforts in this direction are beginning to emerge. Gensler Architecture, Design & Planning periodically hosts members of the Washington, D.C., real estate community to discuss the future of building security. Recommendations from these meetings echoed de Becker's observations and added an emphasis on cost-effectiveness and the knowledge that threats change over time, an acknowledgment that further complicates risk assessment and, at the same time, creates an ecumenical and more productive exchange.

Security through design

Visual links between important federal buildings and open public spaces were important components of L'Enfant's 1791 master plan for the nation's capital and remain so today, even amidst the clutter of makeshift security devices. Two projects demonstrate how security-minded design can actually improve the aesthetics of important spaces. The Washington Monument has been surrounded by Jersey barriers since 1998, when the U.S. embassies in Kenya and Tanzania were severely damaged by truck bombs. With the monument's renovation complete and its vulnerability to attack obvious, a plan to maintain its openness and security was approved by the Fine Arts Commission in December after the Philadelphia-based landscape-architecture firm Olin Partnership won the National Park Service's competition for a perimeter security plan. Instead

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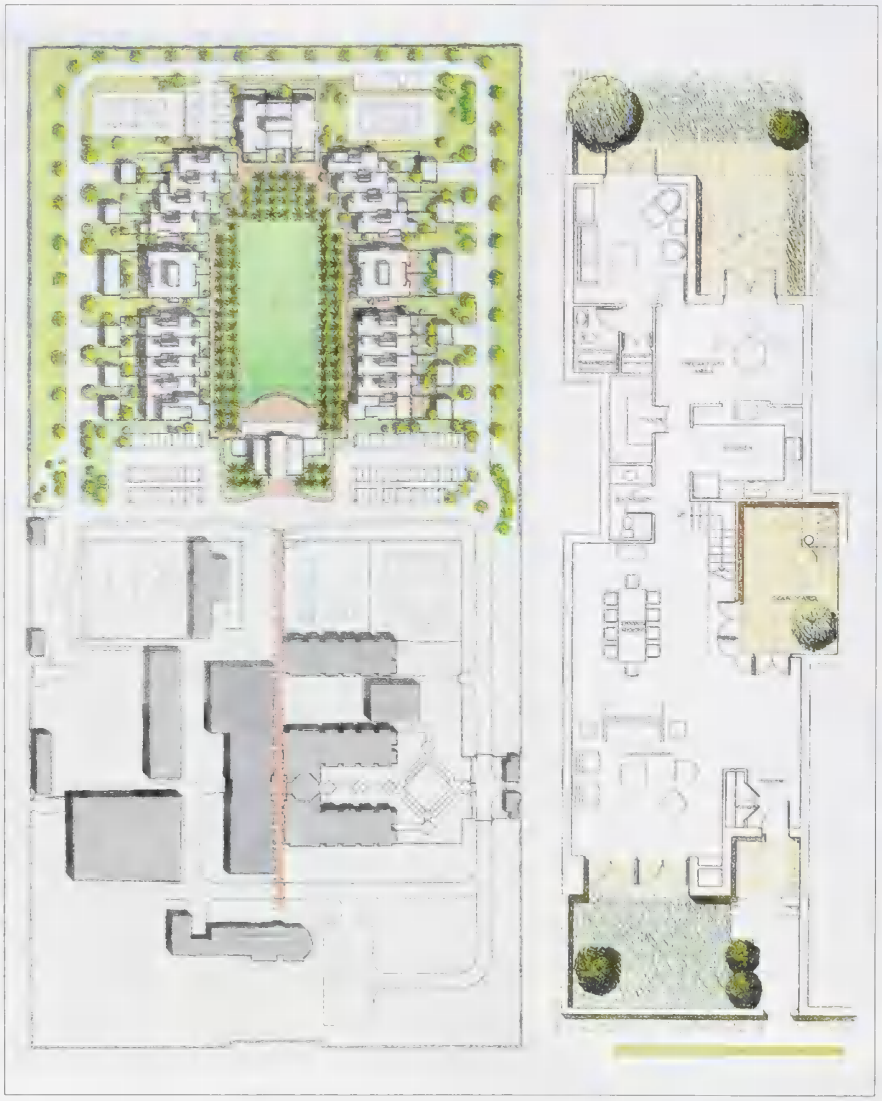

Protecting Americans abroad

Sorg and Associates' staff housing for the U.S. State Department in Bayan, Kuwait, incorporates security needs into the architecture. Town houses are sited around a courtyard with vehicular and pedestrian access controlled by gatehouses. Rear yards have high walls, and a day-care center is located deep within the compound.

PHOTOGRAPHY: © FRANCESCA FIREK/U.S. STATE DEPARTMENT

of concrete bollards, fences, or outbuildings, the firm proposed a series of sunken paths of varying widths carved into the sloping hillside with 3-foot-deep, stoned-clad retaining walls, which will prevent vehicles from approaching the monument but won't disrupt critical sight lines.

Principal Laurie Olin rejected the idea of decorative bollards: "They would look like confetti on a large landscape." Instead of cluttering the hillside, he chose a centuries-old device used in French and English country gardens—the *ha-ha*, a channel with a retaining wall that serves as a substitute for a fence (it kept the cows away and yet was invisible from the manor house). "It's a natural solution and one that recalls some of the low walls and grading that [Frederick Law] Olmsted designed to direct pedestrians to the Capitol." In addition, tourists wishing to ascend the monument will be screened in a 20,000-square-foot, underground visitor center (to be designed by Washington-based Hartman Cox Architects) at a distance of 400 feet from the monument, and then approach it through a tunnel.

AFTER SEPTEMBER 11, ARCHITECTS WERE CONFRONTED WITH NEW QUESTIONS ABOUT SECURITY AND MARKET REALITIES.

The importance of a standoff distance is again confirmed in a similar scheme for the Capitol Visitor Center (CVC) under the Capitol's east plaza. According to Alan M. Hantman, FAIA, Architect of the Capitol—whose office is responsible for the 100-acre area within the Capitol Perimeter, which includes the Capitol itself, all the Congressional office buildings, the Capitol police headquarters, Library of Congress, Supreme Court, and other facilities—"Until two Capitol police officers were murdered in 1998, visitors [as many as 18,000 a day] were screened only after they were inside the Capitol building. After the tragedy, a makeshift shed was erected outside the east portico." To meet changes in security needs, Hantman reviewed and revalidated the plans, which needed few revisions to address new concerns.

Designed by Baltimore-based RTKL, the CVC is no mere security checkpoint. Scheduled for completion in 2005, it will contain an astonishing 588,000 square feet on three levels (compared with the Capitol, which covers 775,000 square feet) and will include exhibition spaces, two orientation theaters, an auditorium, gift shops, food services, vehicle access, loading docks, shell space for future use, and storage. By being underground, it is more secure, of course, but the greatest advantage is that it allows the plaza, which is currently a parking lot, to be

Ellison's Balanced Door.
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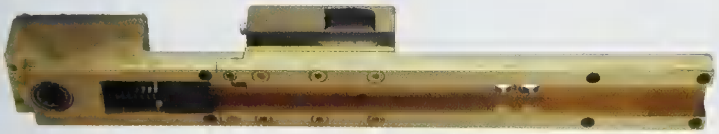
Cast bronze check and door guide assembly

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Cast bronze top pivot with bearing

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Torsion bar closer spring

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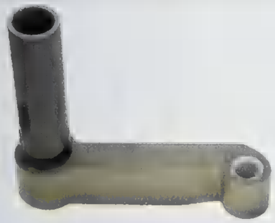
Cast bronze bottom arm

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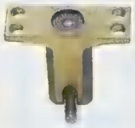
Cast bronze semi-automatic hold open device

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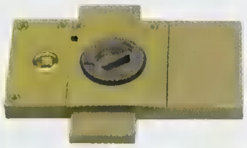
Cast bronze floor box

+

Cast bronze door roller guide

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Cast bronze door bottom pivot

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Cast bronze top arm

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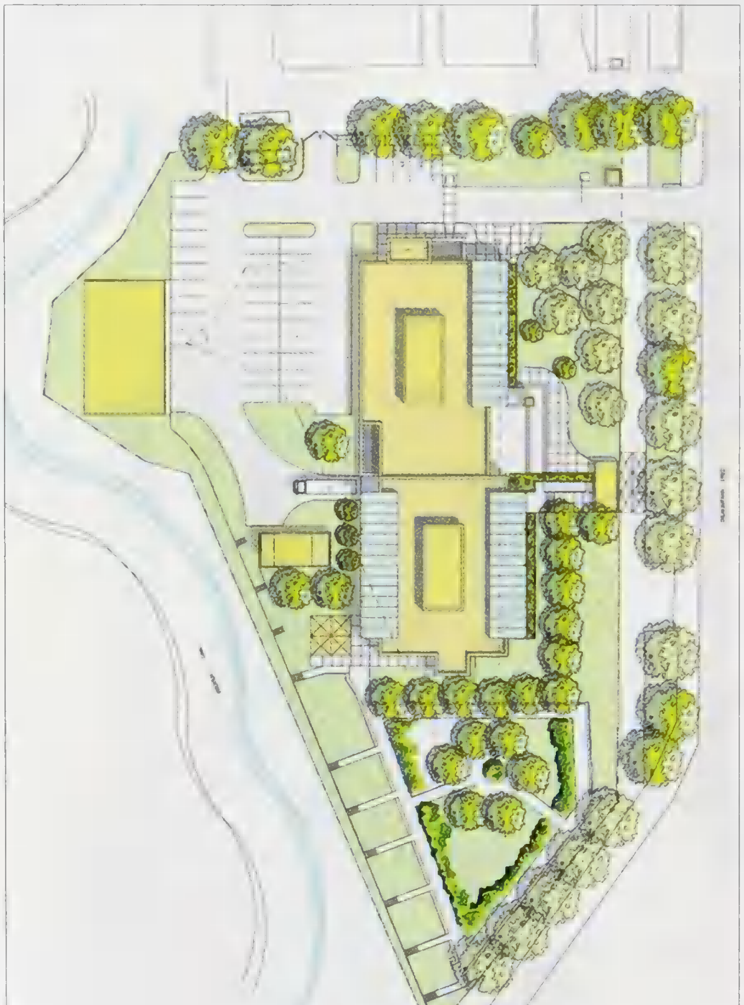
returned to Olmsted's landscaping scheme of the 1870s.

The balancing of security strategies with the increasing demand for openness and accessibility, whether in private office buildings or federal buildings, is illustrated in two projects abroad. Suman Sorg, principal of the Washington, D.C., firm Sorg and Associates, has designed and renovated several buildings for the State Department and is experienced with security issues in other countries. Sorg recently designed new staff housing in Bayan, Kuwait. "The security criteria are different for diplomatic housing than for offices. There is always a debate about whether the housing should be near the offices or far away," she explains. The traffic is different. Children go to and from school; housekeepers, babysitters, and friends come and go, too, creating the need for the residences to be accessible around the clock.

Sorg's solution illustrates Barber's point that security should be incorporated into the architecture. Thirty-two town houses with community and day-care centers encircle an interior courtyard removed from the office compound. Separate vehicular and pedestrian entrances lead into the courtyard, each with its own guardhouse equipped with cameras and metal detectors, and yet this configuration seems no different from any gated community in the U.S. Openness, as an architectural representation of democratic ideals, was mandated by the State Department when it commissioned Sorg to design a new embassy in Tashkent, Uzbekistan, a former Soviet republic. Using local materials, Sorg designed an anti-climb (no footholds below 9 feet) brise-soleil. Stuccoed concrete walls with small security windows are hidden behind a fake curtain wall. Stand-off distances for utility buildings, screening areas, parking, and controlled access are incorporated here as in all federal projects, but here the subtle integration of all needs into the design of the building makes the most stringent precautions seem uncontrived and appropriate.

"THE SECURITY CRITERIA ARE DIFFERENT FOR DIPLOMATIC HOUSING THAN FOR OFFICES."



New embassy reflects democratic values

The U.S. Embassy in Tashkent, Uzbekistan, will have an anti-climb brise-soleil in front of a fake curtain wall that camouflages the stuccoed concrete envelope. A variety of window systems provides different levels of protection. Utility outbuildings make it unnecessary for service trucks to enter the compound. The site is protected with bollards on three sides and an intermittent irrigation canal at the rear.

Making smart choices

However a project is funded, a vulnerability assessment and cost-benefit analysis will determine whether the architect and client should pursue an active or passive plan. Active systems include expensive devices such as electronic entry control, closed-circuit TV, alarms, scanners, turnstiles, and guards, who can cost $220,000 a year for 24/7 service. In many cases, though, passive systems, such as evacuation plans, lighting, landscaping, and well-designed planters and bollards might be more effective.

Passive systems on a large scale can unify architectural elements as well as provide security. The Alexandria, Virginia, office of EDAW, a consulting firm and service provider in a variety of fields including urban design, environmental science, and landscape architecture, is one of several firms that is designing alternatives to the Jersey barrier. Their work is part of an approach recommended by the National Capital Planning Commission's Interagency Task Force to correct the damage done to the capital's character due to independent attempts at security at the expense

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of a comprehensive urban design strategy. Two years ago, EDAW designed a series of bollards, planters, street furnishings, and gatehouses around the Capitol Perimeter zone, especially around the Hart Senate office building on Constitution Avenue.

"I can't give you specific information on the bollards and planters, as it's information we may not to share," said Marsha Lea, senior associate, reflecting the sensitive nature of working for the government. "Each element is engineered to withstand a fully loaded truck traveling at low speed. This means that reinforcing in the aboveground portions, reinforced concrete footing and depth of footing, height above ground, and materials were all designed to do what a Jersey barrier does."

PEOPLE TOLERATED THE UGLY MAKESHIFT BARRIERS AROUND GOVERNMENT BUILDINGS BECAUSE THEY SEEMED TEMPORARY.

Could this be a sign that the Jersey barrier is about to return to its natural habitat, the freeway? As long as terrorist attacks occurred in foreign lands, no one paid much attention to the inadequacies of our own built environments. People tolerated the ugly makeshift barriers around government buildings because they *seemed* temporary. But since September 11, it is obvious that the threats are permanent, so the solutions also have to be permanent. ■

Resources for security through design

The American Institute of Architects (AIA)
"Building Security Through Design"
www.aia.org/security/

Gensler Architecture, Design & Planning Worldwide
"Security & Openness: Integrating Security into Office Buildings"
www.gensler.com/events/index.htm

Architectural Record, AIA, RTKL, National Building Museum, and Urban Land Institute
"Freedom without Fortresses? Shaping the New Secure Environment" (symposium)
www.archrecord.com/NEWS/ARTICLES/nbm112101.asp
www.rtkl.com/id4/symposium.asp#talk

General Services Administration (GSA)
hydra.gsa.gov/pbs/firstimpressions/

National Capital Planning Commission (NCPC)
www.ncpc.gov/planning.html

American Society of Landscape Architects
Security Design Coalition
www.asla.org/Members/publicaffairs/factsheets/securedesignfs.htm

National Science Foundation
Funding opportunities
www.nsf.gov/home/programs/eng.htm

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- **Read the articles "Fear Must Not Become a Form-Giver for Architecture," page 55, and "In the Aftermath of September 11, the Urban Landscape Appears Vulnerable and Random," starting on page 135, using the learning objectives provided.**
- **Complete the questions below, then fill in your answers (page 226).**
- **Fill out and submit the AIA/CES education reporting form (page 226) or download the form at www.architecturalrecord.com to receive one AIA learning unit.**

QUESTIONS

1. What was the Jersey barrier originally designed to do?
  a. divide sidewalks
  b. reinforce concrete walls
  c. keep vehicles from careening into oncoming traffic
  d. provide exterior security

2. What does architecture convey about the people of a society?
  a. their political values at that time
  b. their idealist views for the future
  c. their technological savvy
  d. their artistic values

3. The GSA published summary calls for security to be designed to meet what criteria?
  a. all possible threats
  b. rare catastrophic threats
  c. reasonable threats
  d. routine threats

4. The science of building vulnerability proposes all of the following except?
  a. formation of a new regulatory agency
  b. a cross-disciplinary effort
  c. a consensus regarding "credible threats"
  d. more federally funded research

5. The proposed plan for the Washington Monument used which type of perimeter security?
  a. fences
  b. concrete bollards
  c. sunken paths
  d. Jersey barriers

6. By being underground, the Capitol Visitor Center allows which advantage?
  a. a parking structure above it
  b. a return to Omsted's landscaping scheme
  c. room for future expansion
  d. it cannot be seen by satellite

7. The outcome of meetings held by Gensler in Washington, D.C., was which?
  a. buildings cannot be protected totally against terrorism
  b. all buildings should have a defense against truck bombs
  c. threats change over time
  d. an open image is more important than terrorist threats

8. Whether a building will have an active or passive security plan is determined by which?
  a. if any tenants in the building are federal agencies
  b. if the client can afford the expensive active devices
  c. if it is single or multi-tenant occupied
  d. if a vulnerability assessment and cost-benefit analysis recommend it

9. An example of a passive security plan is which?
  a. closed-circuit TV
  b. lighting
  c. electronic entry control
  d. turnstiles

10. The mandate for new buildings is which?
  a. security is of utmost importance
  b. less demand for openness
  c. balance security with increased demand for openness
  d. more emphasis on accessibility first, security second

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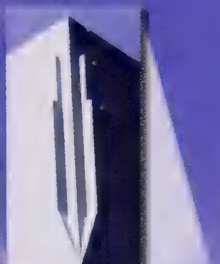

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"Life Safety Design: Specifying Fire-Rated Assemblies"
Provided By USG, February 2002

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Provided By The American Institute of Steel Construction, Inc., February 2002

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USG *Presents*

LIFE SAFETY IN BUILDING DESIGN: Specifying Fire-Rated Assemblies

by: *Rich Kaczkowski*
PROGRAM MANAGER, CONSTRUCTION SYSTEMS LABORATORY
USG RESEARCH & TECHNOLOGY CENTER
Nestor Sanchez
ARCHITECTURAL SYSTEMS MANAGER, UNITED STATES GYPSUM COMPANY

It goes without saying that life safety in building design is of paramount importance. However, because the standards and codes that regulate life safety design are continually evolving and improving, it is often difficult for architects to stay abreast of the latest requirements, systems and design specifications.

While life safety encompasses everything from personnel security to blast resistance to redundant protection against structural collapse, the core life safety issues still revolve largely around fire containment and control. Proper design of interior wall and floor/ceiling assemblies is an essential component of fire-resistant construction and, as such, a review of the fundamental specification principals behind fire-rated assembly design is timely and important.

AIA/ARCHITECTURAL RECORD
CONTINUING EDUCATION Series

Use the learning objectives below to focus your study as you read **LIFE SAFETY IN BUILDING DESIGN: SPECIFYING FIRE-RATED ASSEMBLIES**. To earn one AIA/CES Learning Unit including one hour of health safety welfare credit, answer the questions on page 145, then follow the reporting instructions on page 231 or go to the Continuing Education section on *www.architecturalrecord.com* and follow the reporting instructions.

Learning Objectives:

- Understand why fire-rated wall and floor/ceiling assemblies must be specified as systems;
- Realize the role that gypsum panels play in fire-rated systems and know how the panels perform under fire conditions;
- Understand the basic criteria for specifying firestopping systems, gypsum cavity walls and area separation walls.

The Systems Approach

A systems approach is a key principle behind successful fire-resistant wall and floor/ceiling design. These assemblies must be viewed and specified as complete systems. Why? It has long been recognized that the fire resistance of an assembly is strongly influenced by the interaction and compatibility of the individual components comprising it. Building codes require that wall and floor/ceiling assemblies be tested by independent bodies, such as Underwriters Laboratories Inc. (UL), and that the resulting rating be assigned to the complete system. This systems approach best reflects the reality of how an assembly performs when exposed to fire.

A wall system, for instance, may consist of products such as gypsum panels, framing members, fasteners, joint compound and finish treatment. The system may also include penetrants (e.g., pipe or conduit) breaching the wall that must be compensated for through the proper application of firestopping materials. The performance of the wall is dependent on how well these various products and materials function as an integrated wall assembly, or system. Performance will vary depending on:

- *the type of gypsum panel used;*
- *how the panels are applied (horizontally or vertically);*
- *the type and spacing of framing;*
- *the type and spacing of fasteners;*
- *the size, type and number of penetrations;*
- *where and how the partition intersects with a floor/ceiling assembly;*
- *and a variety of other issues.*

Individual products that are included as part of a system cannot compensate for any deficiencies in the overall system design. For instance, specifying an enhanced fire-resistant gypsum panel will not compensate for using an undersized stud or an inadequate number of fasteners.

Proper installation of a fire-rated assembly is also important. Good construction practices, executed in accordance with manufacturers' recommendations, are needed to ensure that the assembly built in the field is representative of the one tested.

The type of fire rating required for a specific partition or assembly is further impacted by a number of additional building design issues. Are the walls load-bearing or non-load-bearing? Are automatic sprinklers installed in the building? What is the anticipated building occupancy? How tall is the building? What is the proximity of the building to neighboring lot lines? All of these factors and others affect the fire-resistant rating that a partition or assembly must achieve.

In view of all these issues, it's no wonder that fire-resistant assembly design and construction is one of the more complex issues that architects and specifiers face on a day-to-day basis.

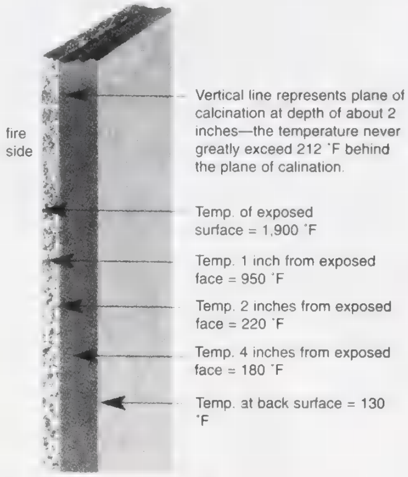

fire side
Vertical line represents plane of calcination at depth of about 2 inches—the temperature never greatly exceed 212 °F behind the plane of calination.
Temp. of exposed surface = 1,900 °F
Temp. 1 inch from exposed face = 950 °F
Temp. 2 inches from exposed face = 220 °F
Temp. 4 inches from exposed face = 180 °F
Temp. at back surface = 130 °F

Diagram of a 6-inch-thick structural mass illustrates the fire resistance of gypsum materials at the end of a test conducted by UL.

Gypsum Panels in Fire-Rated Assemblies

A basic starting point for clarifying fire-rated assembly specifications is to understand the performance attributes of the gypsum panels used in fire-resistant systems.

Gypsum ($\mathrm{CaSO_4 2H_2O}$), the principal raw material present in gypsum panels, is a naturally fire-resistant mineral. It contains chemically combined water (approximately 20 percent by weight). When the face of a gypsum panel is exposed to fire, the heat converts a portion of the combined water to steam. This process dissipates the heat energy, keeping the opposite face of the panel relatively cool. The panel will effectively limit the transmission of heat as long as there is water left in the gypsum, or until the panel is breached.

Type X, or fire-resistant gypsum panels, contain additives such as chopped glass fiber that are incorporated into the gypsum core. When exposed to fire, these additives serve to bridge the gypsum crystals and reduce the size of cracks that form as the panel's water is converted to steam. This further prolongs the integrity of the panels, enabling them to continue to act as fire barriers and thus retard the passage of heat through the assembly.

A wall or floor/ceiling assembly fire test simply measures the time it takes for the system to reach the limiting criteria specified in Standard ASTM (the American Society for Testing and Materials) E119. For a wall assembly, the limiting criteria is defined as passage of flame through the wall, exceedance of a prescribed temperature rise on the unexposed face of the wall, the ability of the wall to carry a superimposed design load during the fire (for load-bearing walls), or projection of water through the assembly. Per ASTM C36, a $^{5}/_{8}$-inch-thick Type X panel must provide no less than a one-hour fire resistance rating when applied in a single layer on each face of a load-bearing wood-stud wall when tested in accordance with ASTM E119. A $^{1}/_{2}$-inch Type X panel must provide a 45-minute fire resistance rating on the same assembly.

A second type of fire-resistant gypsum panel, known as Type C (enhanced Type X), provides even better performance. In addition to glass fiber additives, Type C panels contain additives that expand in the presence of heat, somewhat compensating for the panel shrinkage resulting from the dehydration of the gypsum. This helps add stability to the core, significantly enhancing the panel's fire-resistant performance.

The distinction between Type X and Type C panels is important. Unless clearly stated by a recognized independent testing body such as UL, Type X and Type C panels are not interchangeable. A Type C panel may generally be substituted for a Type X panel of the same thickness, but the reverse is not true; nor can a $^{5}/_{8}$-inch Type X panel be substituted for a $^{1}/_{2}$-inch Type C panel without a case-specific evaluation. This is particularly important on floor/ceiling assemblies, where the enhanced Type C performance is deemed essential.

Another important factor to consider is that in fire-rated steel-stud wall assemblies gypsum panels must typically be installed with all board joints (i.e., the edges and ends of the panel) backed by framing. Horizontal joints must also be staggered, so they do not align on each side of the wall. The reason for this is that joints normally open as the wall is exposed to fire, allowing heat and flame to enter the cavity and pass through the wall. The backing and staggering of joints helps compensate for this condition.

However, there are exceptions to this. Some manufacturers' Type X panels have been extensively tested to demonstrate that they may be installed without the need for backing the horizontal board joints. Furthermore, the horizontal joints of these panels do not need to be staggered on opposite sides of the studs. Details on this specification are explained in UL Design Nos. U419 (for non-load-bearing walls) and U423 and U424 (load-bearing walls). These designs offer architects a one-stop source for meeting a wide range of fire-rated performance requirements for wall scheduling. Within single designs, they provide all the details required for specifying non-load-bearing walls up to four hours duration and load-bearing walls up to two hours duration.

Listings of many other fire-rated designs are available from UL's *Fire Resistance Directory*, from the Gypsum Association's *Fire Resistance Design Manual* and from individual gypsum board manufacturers.

However, the fact that tested results are available for thousands of different wall and floor/ceiling assemblies does not eliminate the "gray areas" that architects may encounter when specifying fire-resistant systems. When the issues are

Gypsum Area Separation Wall Installation

Steel H-stud slides in place over gypsum liner panels.

An aluminum breakaway clip is screw-attached to studs and framing. Under fire exposure, the clips break away, permitting the fire-damaged wall to fail while leaving the separation wall intact.

Steel C-runner fits over the studs and panels. A second C-runner is then screw-attached back to back to lower the runner to hold the next level of studs and liner panels.

unclear, it is advisable to contact either the gypsum board manufacturer or the independent testing agency for clarification. For complex projects, independent fire code consultants may be brought in to recommend specific approaches for meeting code requirements. Ultimately, however, it is the local building code officials who function as the final decision-makers. As such, it is best to involve code officials as early as possible in the design process. This often helps to keep small problems from developing into costly, complex issues.

Cavity Shaft Walls

From a life safety standpoint, cavity shaft walls are among the most important assemblies in any building. These engineered wall systems deliver critical fire resistance and structural integrity around stairwells, elevators and other building enclosures. During a fire, they provide a means for occupants to exit, while allowing access for rescue and fire-fighting personnel. They also offer a channel for communications, and enable the movement of power, water, fresh air and exhaust.

When creating cavity shaft wall specifications, tested system performance should be given top priority. While this premise holds true for virtually any fire-resistant design, it is especially critical for cavity shaft walls. When it comes to tested performance, no other type of cavity shaft wall system has undergone more extensive research, testing and refinement than gypsum panel wall systems.

Gypsum shaft wall systems provide fire ratings up to four hours. The assemblies are lightweight—a two-hour system weighs only approximately 9 pounds per square foot and is only $3^1/2$ inches thick. They install more quickly and cost effectively than "wet" cavity shaft walls, such as concrete block, and are erected from outside the shaft at each floor, eliminating the need for scaffolding. The shafts are enclosed early in the construction process and finished later, along with other interior partitions.

Although various types of gypsum shaft wall systems are available, the most extensively tested and most widely used system is built using C-H studs. This stud profile combines a conventional "C" shape with an "H" pocket. A two-foot-wide gypsum liner panel is slid into the H pocket, requiring access from only one side of the wall. Conventional four-foot-wide Type X or Type C gypsum panels are screwed into place on the C side of the stud. The C-H studs, which are engaged to steel J-runners fastened to the floor and ceiling, produce a stronger wall and enable greater limiting heights compared to competing systems.

Gypsum liner panels have a fire-resistant core and are treated to resist moisture penetration. Multiple layers of gypsum panels can be applied to obtain fire ratings of up to four hours duration. If required per the specification, Type X or Type C gypsum plaster base panels may be used to accommodate a veneer plaster finish.

When specifying cavity shaft walls, look for tested performance that accurately represents actual job conditions. For instance, determine whether the cavity shaft system has been tested (per ASTM E152) with the type of elevator door that will be used. Review the system's tested performance for call-button and floor-indicator penetrations (per ASTM E119), and seek a system with UL-listed smoke and fire dampers.

To ensure system longevity, make sure that the manufacturer has not only conducted structural testing to develop limiting heights (the maximum wall span that may be built for a given design load without exceeding stress or deflection limits), but has tested the wall to a high number of repeated cycles or oscillations. Cavity shaft walls are subjected to both positive and negative pressures as elevator cabs rise and descend. Oscillation testing provides assurance that the walls will withstand this continual flexing throughout the life of the building.

FIRESTOPPING – AT A GLANCE

To achieve a desired fire rating for a partition or floor/ceiling assembly, all penetrations through that assembly must be treated with a firestopping material.

In order to achieve a desired fire-rating for a partition or floor/ceiling assembly, all penetrations through that assembly must be treated with a firestopping material that meets nationally recognized test standards (ASTM E814 or UL 1479). A *penetration* (also called a *through-penetration*) is a hole cut or formed through the entire assembly to permit passage of a penetrant, such as a pipe, conduit, duct or cable bundle. The *annular space*, or the gap between the opening in the assembly and the size of the penetrant, must be filled with a firestop sealant and, if needed, a forming material. The *forming material* (usually mineral wool insulation) serves as a backing or dam for the firestop sealant.

In addition to penetrations, firestopping materials are also used on joint systems between adjacent walls and/or floor/ceiling assemblies. UL identifies four types of joint systems: floor-to-floor, wall-to-wall, floor-to-wall and head-of-wall. The test criteria for all these building joints can be found in the Standard UL 2079, *Tests for Fire Resistance of Building Joint Systems.*

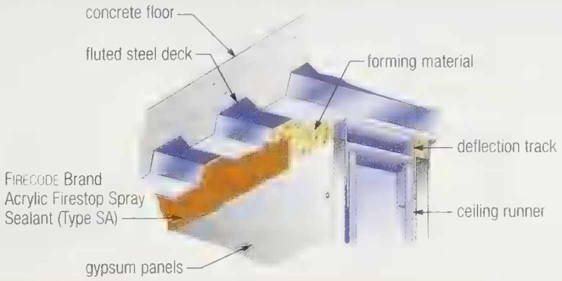
Generally speaking, there are three primary types of firestop sealant materials: mortar, caulk and intumescent.

Mortar-type firestops are applied wet over the forming material (when needed). They are available in either powder or ready-mixed formulations, and are usually the most economical option. They set or harden to form a strong, durable firestop, and are typically used in walls, floors and curtain wall slab edge conditions where strength and economy are required.

Caulk-type firestops are applied from a caulking tube or pail, or are spray-applied. They are easy to install, economical and flexible. They are typically used in dynamic joints in head-of-wall systems, as well as in certain floor and wall penetrations where movement is anticipated and flexibility is required.

Intumescent-type firestops are specifically designed for use with plastic and insulated pipes, and other penetrants that will be burned or melted when exposed to fire.

Intumescent materials expand when exposed to heat to fill the cavity left by the damaged penetrant and thus prevent the passage of flame and smoke.



Head-of-wall intersections, where drywall partitions meet fluted steel decks, represent one of the more difficult firestopping applications for both specifiers and contractors. UL-classified head-of-wall systems are available that utilize sprayable firestopping products. These products provide a cost-efficient solution for head-of-wall applications with long construction joint runs.

UL DESIGN NUMBER U419: A One-Stop Specification Source for Non-Load-Bearing Walls

UL Design Number U419 provides all the details required for specifying non-load-bearing walls with fire ratings from one to four hours. Shown here are a two-hour wall assembly (left) and a four-hour wall assembly.

Area Separation Walls

For multifamily construction, area separation walls (also known as "fire walls," "party walls" and "townhouse separation walls") serve to protect residents of adjacent units in townhouses and apartments in the event of a fire. They must provide both fire protection (usually two hours) and the needed structural stability to withstand the collapse of an adjacent structure without losing their integrity. Both concrete block and gypsum-based systems are commonly used as area separation walls.

A basic masonry area separation wall configuration consists of a non-load-bearing concrete block wall serving as a divider between wood frame construction on either side. Lateral support from the adjacent construction can be provided to stabilize the area separation wall at intermediate floors and roofs, but the lateral attachment must be designed so that the collapse of the adjacent construction in the event of fire will not cause the area separation wall to fall.

Gypsum-based area separation walls consist of 1-inch-thick gypsum liner panels used in conjunction with H-shaped steel studs and C-shaped runners to form thin, space-saving alternatives to concrete block. While meeting the same design requirements for fire and lateral load resistance, the drywall assemblies weight at least 50 percent less than masonry walls, install more quickly and require less floor space. The structural stability of gypsum-based area separation walls is achieved through the use of special aluminum clips that provide lateral support from the structure to the fire wall at intermediate floors and the roof. The clips also function as break-away fuses by melting or yielding from the rise in temperature on the fire side of the wall. The clips, which melt at 1,200 degrees F (a temperature reached relatively quickly in a severe fire), permit the fire-engulfed structure to collapse independently of the area separation wall.

Conclusion

The objectives of this learning activity were to enable you to understand why fire-rated wall and floor/ceiling assemblies must be specified as systems; realize the role that gypsum panels play in fire-rated systems and know how the panels perform under fire conditions; and understand the basic criteria for specifying firestopping systems, gypsum cavity shaft walls and area separation walls.

The overriding goal of all fire-resistant assembly design is to manage risk and thereby save lives and property in the event of a fire or other catastrophe. For decades, manufacturers, code officials, testing bodies, trade organizations and associations have worked together to help establish the best possible building design and testing protocols. The resulting fire-resistant systems, testing procedures and codes represent the state-of-the-art in life safety design and construction… and they ensure the safest possible living and working environments.

This collective expertise is available to any specifier for any building design. Use it by insisting on a systems approach when specifying materials and by relying on established testing criteria for all fire-resistant design.

Additional Articles and Information: CLICK FOR THIS

As part of this CES learning activity, you are required to read three additional articles relating to fire-resistant assembly design and specifications. Test questions will be included from this information. The articles are:

- **ASTM E119 Fire Endurance of Building Systems:** This article discusses the criteria and testing standards established by ASTM for use in testing assemblies for fire resistance. **To read the article on-line, go to the USG Corporation Web site (www.usg.com), link to "Design Solutions" (located on the top navigation bar), then link to "Fire Construction" (on the side navigation bar) and click on the "ASTM E119 Fire Endurance of Building Systems" link; or go directly to www.usg.com/Design_Solutions/2_2_fire_construct.asp and click on the same story link.** To obtain a fax copy of the article, call USG at 888-874-2450 and ask for the ASTM E119 Fire Endurance of Building Systems Web article.
- **ASTM E84 Surface Burning Characteristics of Building Materials:** This article provides a basic overview of the ASTM criteria used to determine the flame spread and smoke density ratings for an assembly design. **To read the article on-line, go to the USG Corporation Web site (www.usg.com), link to "Design Solutions" (located on the top navigation bar), then link to "Fire Construction" (on the side navigation bar) and click on the "ASTM E84 Surface Burning Characteristics of Building Materials" link; or go directly to www.usg.com/Design_Solutions/2_2_fire_construct.asp and click on the same story link.** To obtain a fax copy of the article, call USG at 888-874-2450 and ask for the ASTM E84 Surface Burning Characteristics of Building Materials Web article.
- **Building and Inspecting Smoke Barriers:** The article provides insights into how gypsum partition walls serve as effective smoke barriers and provides design criteria for creating smoke barriers. **To access the article on-line, go to the Gypsum Association Web site (www.gypsum.org) and click on the "Download Free Gypsum Association Publications" link at the top of the page.** After filling out the required form, download the "Building and Inspecting Smoke Barriers (GA-618-96)" PDF file. To obtain a fax copy of the article, call USG at 888-874-2450 and ask for Gypsum Association publication GA-618-96.

TECHNICAL INFORMATION SOURCES

Following are several leading reference and information sources about fire-rated design issues:

UNITED STATES GYPSUM COMPANY (WWW.USG.COM)

Because the company originally established most of the fire testing procedures currently used by UL, it can offer unique insights into testing standards and applications. U.S. Gypsum's technical support department, which includes eight architects, five engineers and 12 technical representatives, is the largest of all gypsum industry manufacturers. For technical assistance, call 800-USG-4YOU or write United States Gypsum Company, P.O. Box 806278, Chicago, IL 60680.

UNDERWRITERS LABORATORIES INC. (WWW.UL.COM)

To obtain a copy of the *UL Fire Resistance Directory*, call (847) 664-2899, or write to Underwriters Laboratories Inc., Publications Stock, 333 Pfingsten Road, Northbrook, IL 60062.

THE NATIONAL FIRE PROTECTION ASSOCIATION (WWW.NFPA.ORG)

The association provides a wide range of code and standard reports and research data. Contact the association by calling 617-770-3000 or write to the National Fire Protection Agency, P.O. Box 9101, Quincy, MA 02269.

THE GYPSUM ASSOCIATION (WWW.GYPSUM.ORG)

The trade association for the gypsum industry publishes a *Fire Resistance Design Manual* (GA-600) that provides a one-stop reference source for tested fire-resistant wall and floor/ceiling assembly designs. Contact the association by calling 202-289-5400, or write to the Gypsum Association, 810 First St., N.E., Suite 510, Washington DC 20002, or e-mail info@gypsum.org.

Learning Objectives

- Understand why fire-rated wall and floor/ceiling assemblies must be specified as systems;
- Realize the role that gypsum panels play in fire-rated systems and know how the panels perform under fire conditions;
- Understand the basic criteria for specifying firestopping systems, gypsum cavity walls and area separation walls.

Instructions

Refer to the learning objectives above. Complete the questions below. Fill out the self report form on page 231 and submit it or use the Continuing Education self report form on *Record's* website—*www.architecturalrecord.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

Questions

Q: 1. Gypsum works as a natural fire-resistant material because:
A: a: It uses dry construction techniques
b: It can be used with light weight steel or wood framing
c: Heat energy is dissipated as the water turns to steam
d: The gypsum crystals form cracks when the panel's water is converted to steam.

Q: 2. A Type X, or fire-resistant gypsum panel, contains additives such as chopped glass fiber that serve to:
A: a: Reduce the number of fasteners required to attach the panel
b: Reduce the size of cracks that form as the panel's water is converted to steam
c: Eliminate the need for firestopping
d: Increase panel thickness.

Q: 3. Type C gypsum panels provide even better fire-resistant performance by:
A: a: Increasing the amount of gypsum present in the panel
b: Reducing the heat generated from fire as it comes into contact with the gypsum panel
c: Providing a fire-resistant surface that protects the gypsum core
d: Expanding in the presence of heat, compensating somewhat for the panel shrinkage resulting from the dehydration of the gypsum.

Q: 4. Which substitutions are generally acceptable?:
A: a: A Type X panel may be substituted for a Type C panel of the same thickness
b: A 5/8 inch Type X panel may always be substituted for a 1/2 inch Type C panel
c: A Type C panel may be substituted for a Type X panel of the same thickness
d: No substitutions are ever allowed.

Q: 5. A benefit of gypsum-based area separation walls over basic masonry construction is:
A: a: They weigh at least 50 percent less
b: They provide lateral load resistance
c: The collapse of the adjacent construction due to fire will not cause the area separation wall to fail
d: They protect residents of adjacent units in the event of fire.

Q: 6. The structural stability of gypsum-based area separation walls is achieved through use of:
A: a: Large-sized gypsum panels
b: Break-away aluminum clips that provide lateral support from the structure to the firewall
c: Steel studs and runners
d: A non-load-bearing concrete block wall.

Q: 7. A benefit of intumescent-type firestop sealant material over other primary types is:
A: a: It provides flexibility of movement through the penetrations
b: It expands when exposed to heat to fill the cavity left by damaged penetrant
c: It is the most economical option available
d: It fills in the annular space of a penetration through assemblies.

Q: 8. What properties help gypsum board walls function as effective smoke barriers?:
A: a: They can be used on load-bearing and non-load-bearing wall assemblies
b: They can be applied in multiple layers
c: They install quickly and cost effectively
d: They are constructed to achieve a significant degree of fire resistance, sound isolation and reduction of air leakage.

Q: 9. Under ASTM E119, a hose stream test:
A: a: Measures an assembly's ability to withstand lateral impact from falling debris during the fire endurance period and before active fire suppression efforts begin
b: Is an indication of how long a room or zone can contain a fully developed blaze before it spreads to adjacent areas of the building
c: Determines fire-fighting practices or strategies at the fire site
d: Measures how quickly fire develops on an assembly's surface material once that material is exposed to flame.

Q: 10. Flame-spread ratings determined through ASTM E84:
A: a: Measure the transmission of heat through an assembly to the unexposed surface
b: Are measured by a hose stream test
c: Indicate how likely a fire is to move from its point of origin, and how fast.
d: Determine the firestopping material needed in through penetrations in fire-rated systems.

About USG

USG Corporation is a Fortune 500 company with subsidiaries that are market leaders in their key product groups: gypsum wallboard, joint compound and related gypsum products; cement board; gypsum fiber panels; ceiling tile and grid; and building products distribution.

United States Gypsum Company, a subsidiary of USG Corporation, manufactures two types of gypsum panels for use in fire-rated assemblies: SHEETROCK® Brand Gypsum Panels, FIRECODE® Core and SHEETROCK Brand Gypsum Panels, FIRECODE C Core. The company also offers USG Cavity Shaft Wall Systems, USG Area Separation Wall Systems and a range of SHEETROCK Brand firestopping products.

For more information about United States Gypsum Company's products and systems, write USG Corporation, P.O. Box 806278, Chicago, IL 60680-4124, call USG's Customer Service Department at 800-USG-4YOU or visit the company's Web site at www.usg.com.

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DB ☐ 2 - 9
DC ☐ 10 - 24
DD ☐ 25 - 49
DE ☐ 50 - 100
DF ☐ More than 100

Buying Influence
EA ☐ Final Decision
EB ☐ Specify
EC ☐ Recommend
ED ☐ No Role

Location of Firm's Work
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The American Institute of Steel Construction, Inc. presents:

Fire Protection for Steel: Myths Debunked

To ensure that fire protection is properly specified, the project's fireproofing schedule should include as the first note that: "All steel framed floors and roofs shall be considered thermally restrained."

Many designers are over-specifying fire protection for structural steel-framed buildings, according to a report by Richard Gewain of Hughes Associates, Inc., and Emile W.J. Troup, P.E., a consultant and structural engineer based in New England. In many cases, the over-specification results in a 25-50% addition in fire protection, which adds approximately $0.25/sq. ft. to the cost of construction. These numbers become especially troubling in light of actual fire performance. A review of fire data shows no evidence of any loss of life due to structural failure during a fire in a modern structural steel-framed high-rise building in the U.S. (with the exception of terrorist events that also destroyed large portions of the structural system).

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Use the learning objectives below to focus your study as you read **Fire Protection for Steel: Myths Debunked**. To earn one AIA/CES Learning Unit including one hour of health safety welfare credit, answer the questions on page 151, then follow the reporting instructions on page 228 or go to the Continuing Education section on *www.architecturalrecord.com* and follow the reporting instructions.

Learning Objectives

- Understand that all steel construction is classified as "restrained" as it relates to fire protection.
- Know what documents, tests and studies supports the classification of steel construction as thermally restrained.
- Understand that the future of fire engineering lies with performance-based designation in a hotel and a university case study.

Much of the confusion rests with the concept of "restrained" and "unrestrained" fire resistance ratings. Introduced in the late 1960s (and unique to North America), the concept of restraint as it relates to fire protection is poorly understood. Although similar terminology is frequently used in structural design, in the context of fire engineering it should be emphasized that restrained ratings relate solely to resistance to thermal expansion and do not relate to connection design. And, according to Gewain and Troup's review of actual fire data, analytical modeling, and full-scale fire tests, structural steel-framed buildings should be classified as restrained for purposes of specifying fire protection. The new report, which was prepared in conjunction with the American Institute of Steel Construction-American Iron and Steel Institute (AISC-AISI) Task Force for Fire Engineering of Structural Steel Buildings, provides information that will enable architects and engineers to satisfy code provisions requiring justification where fire resistance for steel beam floor and roof systems are based on "restrained assembly" ratings. The Task Force included a wide range of interdisciplinary experts from both the national and international fire safety and structural community. (Copies of the paper, "Restrained Fire Resistive Ratings in Structural Steel Buildings," can be downloaded at no charge from www.aisc.org/fire.html.) To ensure that fire protection is properly specified, the project's fireproofing schedule should include as the first note the following language: "All steel framed floors and roofs shall be considered thermally restrained."

When the dual classification was first introduced, the ASTM E-5 Fire Test Committee clearly recognized that architects, structural engineers, and building officials would have difficulty properly applying restrained and unrestrained ratings to the design of actual buildings. As a result, an appendix was added to ASTM E119 (Appendix X3) to provide guidance to designers and code officials. Table X3.1 (Construction Classification, restrained and unrestrained) contains the following information: "Steel beams welded, riveted, or bolted to the framing members – Restrained."

Prior to 1992, the Underwriters Laboratories, Inc. (UL) Fire Resistance Directory included a similar appendix. Unfortunately, in 1993 the appendix was deleted from the UL Directory in favor of an abbreviated discussion of the details of the UL fire test apparatus (interestingly, even today the Design Information Section of the UL Directory continues to directly reference the now deleted appendix). A careful review of the Fire Resistance Directory indicates that UL has decided to concentrate on describing its own unique test conditions and to defer to nationally recognized standards for guidance on the application of restrained and unrestrained ratings, Gewain and Troup point out. The newly written International Building Code (IBC) states that for an assembly to be considered restrained, evidence satisfactory to the building official must be furnished. Fortunately, a long history of fire testing and actual fire performance provides substantial evidence that steel-framed buildings should be considered as restrained construction.

Eight-story steel-framed building used in Cardington Tests.

For example, test assemblies fire tested at Ohio State University in 1965 were instrumented with strain gages placed on the steel beams loaded and fire tested according to ASTM E119. The vertical loads calculated by accepted engineering procedures to impose design stresses in the steel beams actually imposed measured initial working stress in the range of 18 to 36 percent below the design stresses for the beam assemblies involved in this study. These measured stresses are consistent with measured working stresses observed in ASTM E119 fire tests of floor or roof and beam assemblies. Thus it was shown that extended fire endurance experienced with some E119 tested floor assemblies must have resulted from load or moment redistribution. The boundary conditions in a building at the time a fire occurs are different than those in the ASTM E119 fire test. In actual buildings, it can be expected that these stress levels will be even lower since the tested beams in the OSU fire tests only had a steel deck/concrete slab not more than 3-ft wide. Again, for all practical purposes, steel-framed buildings can be considered restrained, according to Gewain and Troup.

Another relevant fire test involved three simply supported beams with pinned connections (simple double-angle bolted connections). These were found to perform equivalently to beams shimmed tightly against the UL restraining frame. The UL Test Report concluded:

"Summarizing, there does not appear to be significant differences in the fire resistance performance of restrained beams that are shimmed against the test frame as compared to restrained beams that are bolted to clip angles in the manner described in this Report. Thus, this test confirmed that beams with bolted connections should be considered as restrained beams."

During the 1980s, AISI funded an analytical study by Wiss Janney Elstner and Associates (WJE) to review the OSU fire data. WJE, utilizing FASBUS II software, validated the practical classification of restrained construction for structural steel in ASTM E119, Table X3.1.

Recent Fire Studies and Tests

Cardington Fire Tests: 1995-1996

During 1995 and 1996, large-scale fire tests were conducted on an eight-story, steel-framed office building at the Cardington Laboratory of the Building Research Establishment in the United Kingdom. The purpose of these tests was to investigate the behavior of a real structure under real fire conditions and to collect data that would allow computer programs capable of analyzing structures in fire to be verified. The structure was five bays long (148 ft) by 3 bays wide (69 ft) by 108 ft high, and beams in most of the tests were designed as simply-supported acting compositely with a concrete slab cast on metal deck. Columns were protected up to the underside of the floor slab and the beams; deck and floor slab in this unsprinklered building were unprotected.

Although the test program included one test on a restrained beam assembly on the seventh floor, it was noted that restraint as a variable in fire tests is largely unheard of in Europe. During this restrained assembly test, the maximum beam temperature reached was about 1,650°F and the maximum deflection was about 10 in. Although distress was noted in the bottom flange of the beam and at the connections (during cooling), the floor assembly continued to support its applied load at the conclusion of the test.

Ioannides and Mehta: 1997

This analytical study on restrained/unrestrained fire ratings used the measured temperatures at various locations along the depth of the beam and slab to determine nominal flexural strength and capacity of a beam during the ASTM fire test. The authors offered an analytical procedure, using an assumed time-temperature history for the particular assembly and beam rating coupled with the known properties of the steel at various elevated temperatures, to calculate the nominal flexural strength of the beam. They also provided methods to increase the nominal flexural strength (if needed) by accounting for the effects of rotational restraint (due to connections and slab reinforcement) and thrust restraint. Their study showed that, considering the combination of factors that occur in real buildings during real fires, steel beams, protected with spray-applied fire protection material thicknesses for restrained beams, can have sufficient load-carrying capacity without even counting on any restraint. Ioannides and Mehta's work went so far as to conclude that, considering the combination of factors that occur in real buildings during real fires, steel beams, protected with spray-applied fire protection material thicknesses for "restrained" beams, can have sufficient load-carrying capacity without even considering the beneficial effects of restraint.

An Extreme Fire Event

Experience from intense, uncontrolled fires in unsprinklered structural steel high-rise buildings with spray-applied fire protection during the past few decades is limited. However, these few events have borne out the ability of steel and composite floor systems to mobilize the surrounding structural elements and prevent collapse under the most intense of fire exposures. Perhaps the most dramatic example of steel's fire endurance occurred in a high-rise fire in an East Coast city in 1991—probably the most intense high-rise fire ever experienced in the United States. Robert Dexter, now with the University of Minnesota, and Le-Wu Lu of Lehigh University, prepared one of the most comprehensive reports on this dramatic event. The fire was reported to have caused a complete burnout of eight upper stories over an 18-hour period, being halted at the 30th floor by sprinklers that were being retrofitted into the building from the top floor downward. According to Dexter and Lu, although there was considerable distress to steel floor assemblies (originally fire protected based upon a restrained rating classification), there were no floor collapses.

Based on analysis of more than a quarter century of research and development, Gewain and Troup's report presents the following conclusions:

- The "unrestrained assembly" fire resistance rating for structural steel beam floor and roof systems, based on ASTM E119 temperature criteria only, has no relevance to the behavior of these systems exposed to uncontrolled fires in real buildings.
- The fire endurance of structural steel beam floor and roof construction under uncontrolled fire is enhanced by the interaction of the beams with the other structural elements and constructions that are integral with or surround the exposed assembly.
- All steel beam connections to other structural steel members exhibit both axial and rotational restraint. Even the least stiff connection is adequate to develop restrained assembly performance under uncontrolled fire exposure.
- Conclusions drawn from the fire research and computer modeling that have been performed by various agencies, including Underwriters Laboratories, Inc., support the conclusion that a restrained assembly classification and fire protection design is most appropriate for steel beam floor and roof assemblies, and verify the guidance contained in ASTM E119-00, Appendix X3.
- The performance of structural steel beam and concrete floor systems exposed to uncontrolled fires observed during the research and analysis studies conducted during the past 25 years largely explains the excellence performance of these systems during severe fire exposures in unsprinklered, modern mid- and high-rise buildings.

Gewain and Troup's full paper was published in the AISC's Engineering Journal, 2nd Quarter 2001 and is also available, along with a variety of other resources on fire design, on the American Institute of Steel Construction's website (www.aisc.org/fire.html).

Richard G. Gewain is consulting engineer, Hughes Associates, Inc., Baltimore, MD, and former Chief Fire Protection Engineer with the American Iron and Steel Institute. Emile W. J. Troup, P.E., is consulting engineer and consultant based in Canton, MA, and former president of the National Council of Structural Engineer Associations.

Current Building Code Requirements

Because various building codes treat the concept of restraint differently, it is critical for the specifier to clearly state that the design is restrained. The best place for this to occur is on the fireproofing schedule. The first note on the fireproofing schedule should read: "All steel framed floors and roofs shall be considered thermally restrained."

The latest editions of the three model codes have defined restrained assemblies as discussed below.

BOCA National Building Code: 1999 On December 2, 1993, the Building Officials and Code Administrators International, Inc. (BOCA) issued a code interpretation advisory addressing the application of restrained and unrestrained fire resistance ratings. This interpretation indicates that: (1) the support conditions in actual buildings must be considered when applying restrained and unrestrained ratings; (2) in-place construction must be representative of test assemblies; and (3) supporting construction for restrained assemblies must be capable of resisting thermal expansion throughout the range of anticipated temperatures encountered in a fire scenario. In effect, this BOCA Code Interpretation is consistent with ASTM E119, Appendix X3.

SBCCI Standard Building Code: 1997 Prior to 1995 the Southern Building Code Congress, Inc. (SBCCI) issued several nonmandatory interpretations on restraint that relied on the changing guidance in the UL Fire Resistance Directory, since the restraint section in the Standard Building Code (SBC) was largely undefined. In 1995 a significant code change restated portions of ASTM E119 Table X3.1 relative to steel framing in the body of the code.

Section 701.3.2 in the SBC now defines restrained floors, roofs and beams in buildings as those which are surrounded or are supported by construction capable of resisting substantial thermal expansion throughout the range of anticipated elevated temperatures. Construction not complying with this definition is assumed to be entirely free to rotate and expand and must be considered unrestrained. Table 701.3 states that restraint may be provided for steel framing by bolting, welding or riveting steel beams to steel framing members. These connections provide rotational and axial restraint, both (and each) of which is shown in the Gewain/Troup paper to be sufficient to justify a restrained rating. Copies of the paper, "Restrained Fire Resistive Ratings in Structural Steel Buildings," can be downloaded at no charge from www.aisc.org/fire.html.

ICBO Uniform Building Code: 1997 The Uniform Building Code (UBC) of the International Conference of Building Officials (ICBO) references UBC Standard 7-1 (ASTM E119). However, the UBC has adopted a different approach and requires that, before restrained ratings are used in building design, evidence satisfactory to the building official must be furnished by the person responsible for the structural design. Since the satisfactory evidence may vary from jurisdiction to jurisdiction, architects and engineers are encouraged to consult with the appropriate building official before proceeding with fire protection designs (e.g., thickness of spray-applied fire protection) based upon restrained ratings. It should be noted, however, that the use of restrained ratings under the UBC has been validated for specific, major projects based upon advanced computer modeling and analysis of the results from fire tests and research discussed below.

ICC International Building Code: 2000 The 2000 Edition of the International Building Code, (IBC), developed by the International Code Council (ICC), marks the availability of the first unified national building code supported by the three model code organizations mentioned above. This new building code represents a compilation (and compromise) of the latest editions of the BOCA, SBCCI and UBC codes. The IBC references the ASTM E119 Standard Fire Test, which includes the nonmandatory Appendix X3 guidelines. The IBC includes wording similar to the Uniform Building Code in that evidence of a restrained condition satisfactory to the building official must be furnished by a registered design professional. (By including this language, the ICC was addressing concerns related to design responsibility and code enforcement procedures. Building officials noted that the condition of restraint is often omitted from design drawings, leaving the spray-applied material applicators with little or no guidance from the responsible design professional.) The IBC essentially requires the design professional to designate whether fire resistive floors, roofs and beams are restrained or unrestrained. However, the IBC, like the UBC, does not specify what documentation is required to qualify as sufficient evidence of a restrained condition. Essentially, the Gewain/Troup paper, "Restrained Fire Resistive Ratings in Structural Steel Buildings," provides this documentation and can be downloaded at no charge from www.aisc.org/fire.html.

Proposed NFPA 5000 Building Code The National Fire Protection Association (NFPA) has recently embarked on development of an alternate building code to the IBC. At this time language is being drafted to provide guidance for design professionals and code administrators on the application of restrained fire resistance ratings. Publication of the NFPA 5000 Building Code is targeted for late 2002. ■

Fire Protection Q&A

Last year, Socrates Ioannides and John Ruddy, respectively president and chief operating officer of Structural Affiliates International in Nashville, TN, and nationally recognized experts on fire design, held an on-line chat about fire design.

Q: What is the difference between "restrained" and "unrestrained?"

A: Thermal restraint relative to the classification of the fire resistance of a structural assembly is different than the support restraint that will influence the force flow mechanism of the members. Thermal restraint is the resistance to expansion caused by elevating temperatures. The classification of fire resistance in the USA is dependent on the thermal restraint. If the system is classified thermally restrained, the fire protection can be as much as 1/2 that required if unrestrained.

Q: What is "restrained"?

A: Thermal restraint is the degree of resistance to thermal expansion. Restrained is the condition where the members under fire are restrained from thermal expansion by other members (systems) external to the element under consideration. An explicit definition of thermal restraint is difficult however guidance is provided in Table X3.1 of the appendix of standard fire test description. Thermal restraint is defined as the condition when the surrounding or supporting structure is capable of resisting substantial thermal expansion. It may be easier to understand thermal restraint by noting the definition of a thermally unrestrained condition as support conditions free to rotate and expand. Except in unusual conditions, steel framed structures are thermally restrained.

Q: Do you know what other countries are doing (that's different) in this field other than the US?

A: The classification as thermally restrained or thermally unrestrained in unique to the U.S. Other countries do not have this distinction.

Q: As a specific example, I had a column restrained at the top, with platforms bracing the weak axis. In a gas fire the column permanently deformed on the weak axis. Would this be restrained?

A: This does not exactly relate to the R/UR issue. Columns do not have the same distinction. Restrained/Unrestrained (R/UR) only applies to beams. The fire classification of columns is based on the ability of the insulating material to restrict the elevation of temperature of the column for the specified amount of time. Columns are not tested loaded therefore the end result would not be affected by the restraint condition.

Q: What are some of the limitations of the ASTM E119 fire standard?

A: ASTM E119 is a prescriptive test pertaining to the performance of structures to a predefined time/temperature fire curve. The E119 curve actually keeps getting hotter ad infinitum. Real fires die out once the fire load is consumed. The way the test is performed also has limitations-all tests are constructed restrained! The time at which the average temperature of the steel reaches 1100 degrees F becomes the unrestrained rated time. The restrained rating is then double the unrestrained time as long as the system can continue to carry the load, cotton balls are not ignited on the non-fire side and the temperature on the non-fire side does not raise by more than 250 degrees F.

Q: Are there any situations where steel beams would be considered unrestrained?

A: Steel beams sitting on masonry walls should be considered thermally unrestrained. This is a condition where the supports are free to rotate and expand which is the definition of thermally unrestrained.

Q: Does this apply to bar joists? And why?

A: Guidelines for the determination of the condition of thermal restraint are included in the appendix of ASTM E119, "Standard Test Methods for Fire Tests of Building Construction and Materials". Wall bearing steel joists of single span or the end span of multiple bays should be considered unrestrained. Interior spans of multiple bays with joists supporting continuous concrete slabs should be considered restrained.

Beam in Cardington Tests after reaching temperature in excess of 1600° F.

Q: Why is there confusion in the codes currently about restrained vs. unrestrained?

A: AISI spearheaded the fire proofing effort until the mid 80s. Many tests were sponsored including ones at UL that proved that beams connected with minimal shear connections ARE thermally restrained. Between the mid 80's and a couple of years ago the issue was not spearheaded by anybody. During the past few years, AISC has picked up the banner. During the intervening years, however, various interests have intervened and caused changes to certain codes. In the Eastern U.S., though, steel structures have always been considered restrained--SBCCI and BOCA areas generally accepted restrained ratings for steel.

Q: What's going to happen with the IBC?

A: UBC was the first (and only code until IBC) that put the onus of proof of restraint on the design professional. The International Building Code borrows provisions from the three major codes and is an accepted consolidation of the three. The provisions related to fire have been taken from the UBC. And like the UBC, the IBC directs the user to assume the structure to be thermally unrestrained unless evidence satisfactory to the building official showing the construction qualifies as thermally restrained is provided. There is sufficient information available to confirm a thermally restrained condition for framed steel structures. AISC has this information available (call the Steel Solutions Center at 312.670.5440). The recent article in the AISC Engineering Journal by Gewain and Troup is also a resource. Another building code by NFPA is in draft form. The provisions relating to the classification of restrained or unrestrained construction are very similar to the provisions of the IBC.

Q: Hasn't fire research in other countries been much more aggressively performed??

A: Fire engineering is receiving a lot of interest around the world. Rational approaches have been developed in the United Kingdom as well as in Australia. We are catching up and a more rational approach to fire engineering in the US is imminent. As I said earlier, most structures in the Eastern U.S. are being designed as restrained. As for other countries this is mute point, since they do not have this distinction of classifying construction as restrained or unrestrained. A full-scale fire test on an eight-story building was conducted at Cardington, United Kingdom in 1996. The results from that testing have stirred a lot of research interest. The US approach to fire engineering will benefit by the increase in international activity.

Q: How soon do you think we will see a change in the building codes regarding fire protection?

A: Predicting the timing of changes to the building code is difficult. The current codes allow alternative approaches and, as long as the building official is convinced that a reduced level of fire safety doesn't result, the alternative can be used in lieu of prescriptive approaches. In fact, analytical approaches have been used in a number of instances in the U.S. AISC has embarked on a five-year research effort at the end of which it is hoped that Performance Based Fire Engineering will be the accepted approach. Now, how long it will take to codify that, who knows, a few more years.

Q: To what extent are fire-resistant (fireproofing) coatings being employed in the US and elsewhere?

A: Building codes require a fire resistance rating for structural elements when the area and/or height of the building exceeds specified limit for each occupancy type. For instance, under the IBC, an office building with sprinklers over 5 stories would require protection of the structure. Also, under the IBC a one-story school building with sprinklers having an area over 58,000 SF would require protection of the structure. The most common method of protecting the structural elements is with spray-applied materials and the use of these insulating materials is extensive.

Q: How do you demonstrate a restrained condition in the context of the UL Fire Resistance directory? In other words, how do you prove it to the Fire Marshal?

A: There is supporting data obtained from tests and determined analytically proving that steel framed structures are restrained. Fire tests were performed at Ohio State University in 1966, UL Laboratories performed test to determine the condition of thermal restraint in 1984 and Wiss Janney Elstner performed analysis in 1988. For example, the UL test NC 505 -11 performed in 1984 states the following: "Steel structures with standard shear (clip angle connections) did not perform any different than test that were restrained in the normal manner." As mentioned earlier, these reports are available from AISC.

Q: Is there a good source for this information?

A: See 2nd Quarter 2001 issue of Engineering Journal for a summary of these tests. There will be a paper by R. Gewain and E. Troup on the subject, entitled "Restrained Fire Resistance Ratings in Structural Steel Buildings". The paper will also be posted on AISC's website after publication.

Q: Are there other tools to convince a fire marshal? In Virginia, the code official seems to want a direct correlation between restraint and the UL.

A: AISC has prepared a presentation that is given around the country trying to do just that. I think the Gewain/Troup paper in AISC Engineering Journal will provide a lot of the answers. Further, AISC could reproduce the three basic reference (Ohio State, UL, and WJE) and supply them if necessary. If an architect or engineer needs specific help, they can contact AISC at 312/670-2400 or email solutions@aisc.org.

Q: I have doubt regarding the relationship between UL restrained model, based on deflection limit and real structure. For example: limit state of compartmentalization, i.e., possibility of fissures in slab due to deflection of the real structure.

A: You are correct to question the application of test data to real conditions. UL tests are only prescriptive tests for comparison purposes. The rationale approach is to determine from calculations that a structure can sustain load for a specified duration.

Q: How does performance-based fire design work?

A: The ability to sustain load is at the base of the performance-based approach. In addition to the load carrying capacity, other life safety issues can be considered. For instance, sprinklers, fire compartments and travel distances may all provide a level of fire safety that can overshadow the fire proofing material.

Continued at: www.architecturalrecord.com/CONTEDUC/ConteducC.asp

Click for Additional Information

Go to *www.architecuralrecord.com/CONTEDUC/ConteducC.asp* to learn more about fire protection for steel. Test questions related to the online material are included on page 151.

Additional Required Reading

As part of this CES Learning Activity, you are required to read an additional article, "Performance-Based Design for Fire Resistance" by Barbara Lane. It provides some information and examples of performance-based design and fire engineering. To access the article online, visit www.aisc.org/fire.html. Or, to obtain a faxed copy of the article, call AISC at 312.670.5411 or email a request to tuegel@aisc.org.

Learning Objectives

- Understand that all steel construction is classified as "restrained" as it relates to fire protection.
- Know what documents, tests and studies supports the classification of steel construction as thermally restrained.
- Understand that the future of fire engineering lies with performance-based designation in a hotel and a university case study.

Instructions:

Refer to the learning objectives above. Complete the multiple choice questions below. Then go to the continuing education reporting form on page 228. Include the answers to these questions on the reporting form. Follow the instructions on the reporting form carefully. Fill out the form and mail or fax it to the address provided to receive one AIA/CES Learning Unit including one hour of health safety welfare credit. You may also go to the continuing section on *www.architecturalrecord.com* to read the course, answer the questions, print out the reporting form at the end of the course, fill it out and mail/fax the form to the address provided.

Questions

Q: 1. The report by Richard Gewain and Emile W.J. Troup found that the over-specification of fire protection for structural steel-frame buildings adds approximately how much to the cost of construction:
A: a. $0.25/sq. ft.
b. no significant cost increase
c. $.50/sq. ft.
d. $1/sq. ft.

Q: 2. To ensure that fire protection is properly specified, the project's fireproofing schedule should include as the first note the following language:
A: a. all concrete columns shall be considered restrained.
b. all steel framed floors and roofs shall be considered thermally unrestrained.
c. all steel columns shall be considered restrained.
d. all steel framed floors and roofs shall be considered thermally restrained.

Q: 3. Gewain and Troup's report concludes that the fire endurance of structural steel beam floor and roof construction under uncontrolled fire
A: a. is less than 1 hour.
b. is enhanced by the interaction of beams with other structural elements and construction that are integral with or surround the exposed assembly.
c. deteriorates due to the interaction of beams with other structural elements and construction that are integral with or surround the exposed assembly.
d. is more than 1 hour.

Q: 4. "Restrained" is:
A: a. the condition where members under fire are restrained from thermal expansion by other members (systems) external to the element under fire.
b. the ability of a building element to continue its function for a period of time without collapse
c. the resistance to the passage of flames or gases hot enough to ignite other materials
d. assuring that the temperature on the unheated side of an element does not exceed a set temperature.

Q: 5. Except in unusual conditions, steel-framed floors are:
A: a. thermally unrestrained
b. thermally restrained
c. require significant additional fire protection
d. welded to the columns.

Q: 6. Restrained/Unrestrained applies to:
A: a. beams
b. floors
c. roofs
d. all of the above

Q: 7. What situation would be considered unrestrained?:
A: a. cast-in-place concrete slab systems
b. steel beams with bolted connections
c. steel beams sitting on masonry walls
d. interior spans of multiple bays with joists supporting continuous concrete slabs

Q: 8. A benefit of a performance-based design solutions include:
A: a. uniformity among model building codes
b. elimination of additional fire resistance materials or systems
c. increased design freedom
d. all of the above.

Q: 9. Which of these issues is/are driving the move from prescriptive-based design to performance-based design solutions?:
A: a. recommendations based on standard fire resistance test methods are too conservative
b. standard fire resistance testing methods are too cost prohibitive
c. recommendations based on standard fire resistance test methods have led to recent major structural frame failures.
d. b and c

Q: 10. In the Cardington Large Scale Fire Test, the maximum beam temperature reached 1,650 degrees F and:
A: a. the maximum deflection was 10 inches
b. the floor assembly continued to support its applied load
c. the floor assembly collapsed.
d. a and b

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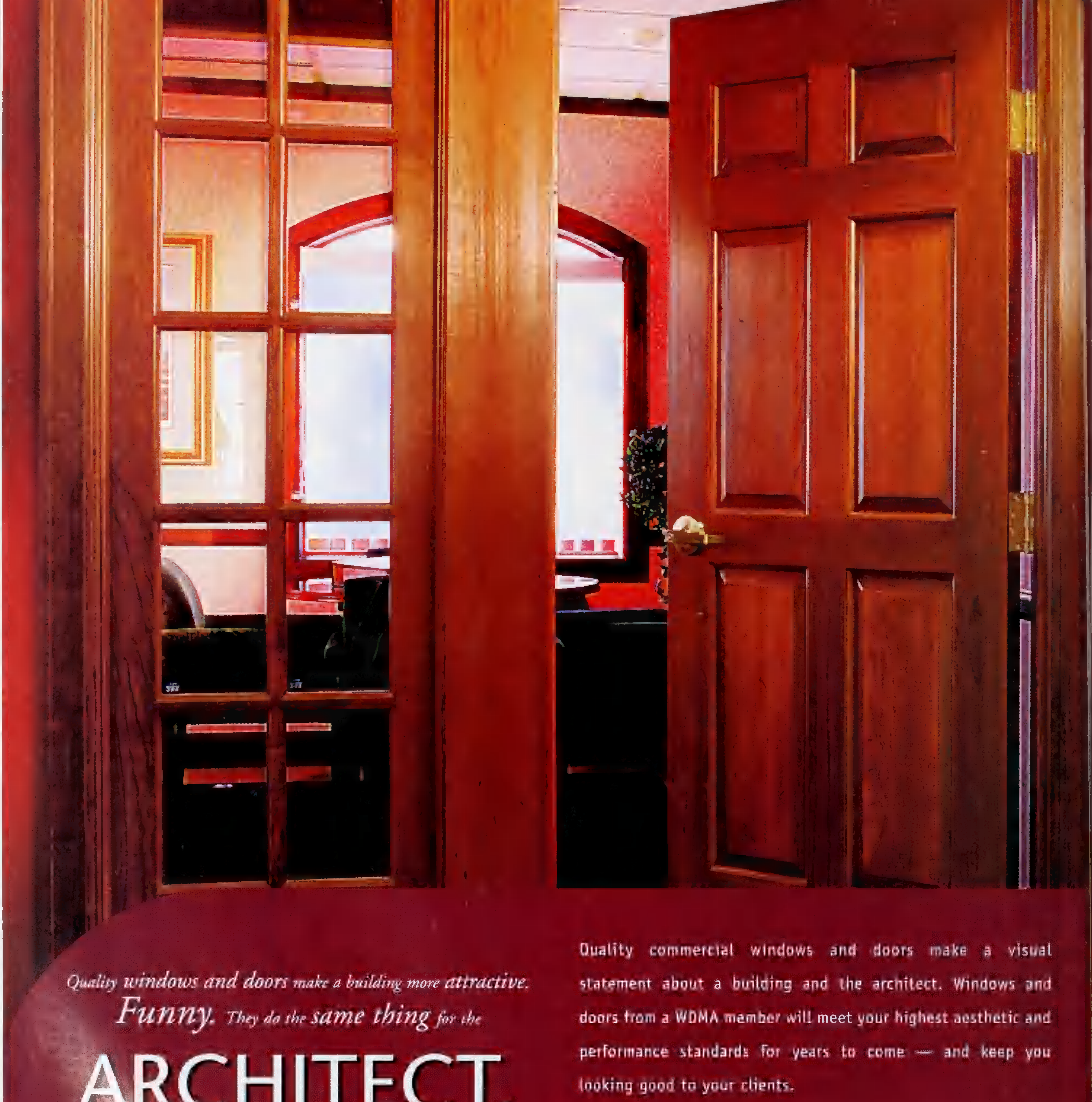

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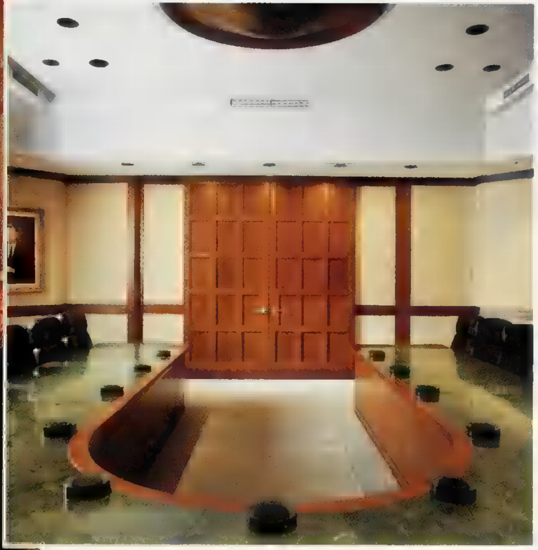


Traditional Appearance, Technological Savvy:

The New Architectural Stile and Rail Doors

"Architectural" stile and rail doors are not new, but their manufacture is undergoing continual change and the end products available from nearly all manufacturers are decidedly different from stile and rail doors designers may have specified in the past. The following section is designed to broaden architects understanding of the processes by which a majority of today's stile and rail doors are made and the new applications in which those doors may be used.

AIA/ARCHITECTURAL RECORD
CONTINUING EDUCATION Series

Use the learning objectives below to focus your study as you read **TRADITIONAL APPEARANCE, TECHNOLOGICAL SAVVY: THE NEW ARCHITECTURAL STILE AND RAIL DOORS**. To earn one AIA/CES Learning Unit including one hour of health safety welfare credit, answer the questions on page 157, then follow the reporting instructions on page 229 or go to the Continuing Education section on *www.architecturalrecord.com* and follow the reporting instructions.

Learning Objectives

- *Recognize the benefits of architectural stile and rail doors and their relationship to traditional solid lumber stile and rail doors.*
- *Understand how to meet code requirements for fire safety with contemporary stile and rail doors.*
- *Know the architect's responsibilities when ANSI/WDMA I.S. 6-A-01 door standards are referenced in a contract.*

Architectural stile and rail doors now carry American National Standards Institute (ANSI) certification, and the Window and Door Manufacturers Association (WDMA) has re-written its architectural standards document to incorporate details arising from the certification process.

ANSI certification will give specifiers and end users of WDMA members' products additional confidence that architectural stile and rail doors are manufactured to comply with standards that ensure their uniformity and consistency throughout a project.

The WMDA's new standards, now referred to as ANSI/WDMA I.S. 6-A-01, are intended to serve as a guide to architects in specifying stile and rail doors, which have undergone something of a revolution over the past decade.

The term "architectural" refers to engineered stile and rail doors, which incorporate veneers and various core materials in place of solid lumber. "Engineered" stile and rail doors now account for 90 percent, or more, of the production of some stile and rail door manufacturers. True stile and rail doors are assembled of individual stiles, rails, mullions, panels or glazing joined by prescribed methods outlined in WDMA and ANSI documents.

WDMA adopted its first standards for architectural stile and rail doors in 1999 to reflect new door manufacturing technology and production processes that took into account new materials and new assembly techniques. Those standards were modified in October as a result of the ANSI certification process.

Prior to 1999, the WDMA published a stile and rail standard—I.S. 6—that encompassed all styles of stile and rail doors from patio and screen doors to interior commercial products. But in 1995, says David San Paolo, operations manager for the Springfield, Mo.-based Maiman Co. and chairman of the WDMA's I.S. 6A quality standards committee, the industry began to see a need for a standard that more closely paralleled WDMA I.S.1A, a standard that applied to architectural flush doors, products made specifically for commercial applications. The change occurred as more stile and rail doors found their way into the commercial marketplace.

"As more and more stile and rail doors were required in the architectural venue, it was discovered there was a need for a new standard for architectural-quality stile and rail doors," says San Paolo.

One impetus for the change was the creation, in the mid-90s, of a 90-minute fire rated classic stile and rail wood door with a high-density, non-combustible wood core, utilizing new, fire-resistant adhesives. The discovery made the manufacturer a leader in the restoration of historic buildings requiring classically designed doors which could also meet contemporary fire safety standards.

Stile and rail doors, thereafter, began to be specified in commercial applications, where, previously, only flush doors with applied mouldings could satisfy fire ratings. Stile and rail doors quickly found their way into building areas that code requirements had made off-limits.

One goal of designers—that of maintaining an identical look throughout a project—has been elusive because of the upper fire ratings. But new core materials, specialty adhesives and new construction techniques, now allow door manufacturers, for the first time, to keep an architectural look and still meet building code fire ratings.

"Historically," says San Paolo, "if you wanted a six-panel door on all your room entries on rooms off a corridor, but you also wanted a six panel door on your stairwell, where a 90-minute fire-door was required by most codes, you were out of luck. Until the mid-90s, you could not have a true stile and rail stairwell door, only a facsimile based on a flush door design with attached mouldings. Same thing with, say, hotel ballrooms, or any number of different applications where code required a two-hour fire separation. You could not have had a stile and rail door prior to development of the new technology."

As a result of development over the past five years, that is no longer true. Architects can now have true stile and rail doors of any species of wood, even glass—not 1/4-inch wire glass, but clear glass—that meet current codes.

The pace of that development is quickening as a result of a heightened emphasis on security in the wake of the September bombing of the World Trade Center. A variety of new security glass, based on feverish testing, will soon make its way into the commercial marketplace, say glass industry sources.

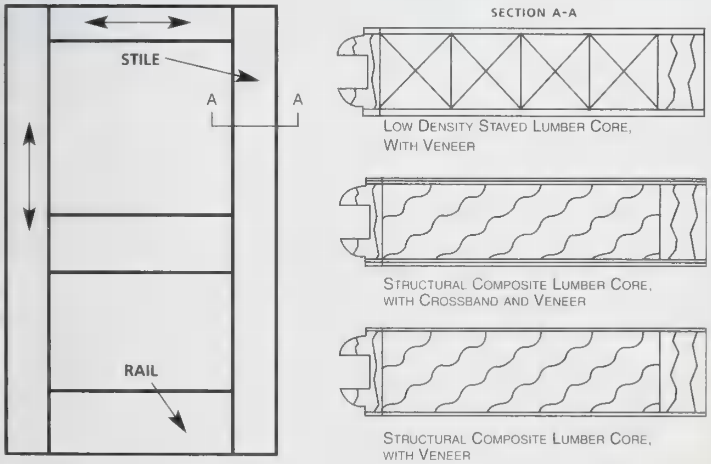
Cherry doors in Bank One Centre, Momentum Place (Dallas, Texas)

"We still talk to architects all the time who are unaware that there are stile and rail doors available in the marketplace for any applications with a greater-than-20-minute fire rating," says San Paolo. "They are still specifying a flush door with a veneer sketched on it to resemble stile and rail doors."

Few stile and rail doors today are made of solid hardwood. For most manufacturers, up to 90 percent of production today is "engineered." There are several advantages in using engineered constructs in place of solid hardwoods, say manufacturers: one is environmental—using veneers in place of hardwood conserves lumber. A second advantage, they say unequivocally, is that engineered products have dramatically improved the quality of stile and rail doors: today's characteristic stile and rail door is largely non-combustible, has excellent screw-holding capacity, good gluing properties (which result in a stronger final product), and increased dimensional stability, meaning that the tendency of assembled door pieces to act independently of one another in

ANSI/WMDA I.S. 6-A-01 Approved Methods of Stile and Rail Construction

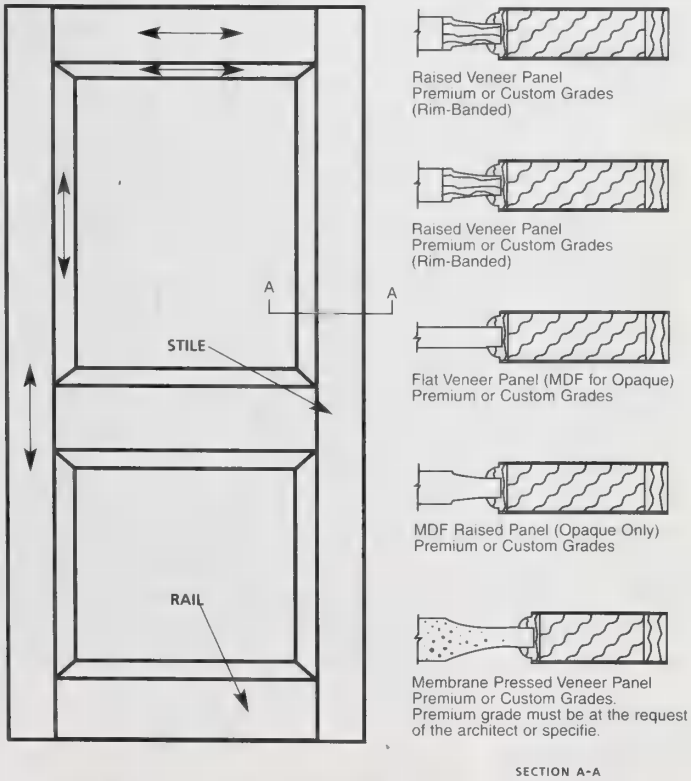
The top illustration below is a section of a low density staved lumber core, once commonplace, but which is diminishing among manufacturers who increasingly favor structural composite lumber (SCL) cores, typically made of quick-growth trees, most often aspen. Compressed composite materials, say manufacturers have excellent "mechanical" properties, for instance their ability to hold hardware. Medium-density fiberboard (MDF) and particleboard are commonly used as core material, but do not have the screw-holding capacity of composites.



Low Density Staved Lumber Core, With Veneer

Structural Composite Lumber Core, with Crossband and Veneer

Structural Composite Lumber Core, with Veneer



Raised Veneer Panel
Premium or Custom Grades
(Rim-Banded)

Raised Veneer Panel
Premium or Custom Grades
(Rim-Banded)

Flat Veneer Panel (MDF for Opaque)
Premium or Custom Grades

MDF Raised Panel (Opaque Only)
Premium or Custom Grades

Membrane Pressed Veneer Panel
Premium or Custom Grades.
Premium grade must be at the request of the architect or specifie.

response to changes in temperature and humidity is significantly reduced. The result is longer life, less maintenance.

"Wood is a living, breathing object, even long after it is cut and sawn," says a manufacturer, "and that continues to take place long after it is installed. Engineered products help minimize those effects, especially movement that can damage doors."

Because only the "profiles" are of the desired lumber species, and the flats are veneered, engineered stile and rail cores can be interchanged in production to introduce non-combustibles to achieve fire ratings without sacrificing appearance.

Engineered stile and rail products once were a tough sell. "I still have some architects who say, "I want solid wood," says a manufacturer. "We still manufacture that door, but less than five percent of all stile and rail doors we manufacture are of solid wood, and those are mainly for exterior applications."

"Because we most commonly use veneers from the same tree in the manufacture of a single door, the compatibility of the grain is much higher in a veneered product than in a traditionally manufactured stile and rail door," he says. "In a typical door, there are eight stile and rail pieces, which in a traditional door are likely to have different grain patterns and potentially widely differing colors. In a contemporary architectural door there is a much greater likelihood of precision matching of wood color and grains."

Veneers: Look, Price, Flexibility

Use of veneers in place of solid hardwood lumber permits diversity of design impossible with traditional construction techniques, say in the ability to mix and match wood species in the same door or face a door with red oak on one side, black walnut on the other.

"One of the 'no-nos' from a solid wood viewpoint is gluing different wood species together, because when you do so, you have all kinds of inherent problems due to the varying degrees of movement of differing wood types," says a manufacturer. "In engineered construction, you can accomplish that kind of thing without a lot of trouble."

Architectural stile and rail doors afford the interior designer incredible variety, including more than 150 varieties of veneer. Not all the wood species available in veneer form are available as solid lumber. The cost of engineered construction architectural stile & rail doors (built to I.S. 6A-01 standards) is about the same as the cost of solid lumber doors, depending on the selected wood species. The cost of a red oak door, for instance, would be similar, whether built of solid lumber or of engineered materials. A door built of more exotic wood species, like cherry, or mahogany, can be manufactured less expensively as an engineered product.

WDMA quality standards, which govern manufacturing procedures by the association's members, along with other manufacturers, provide for two grades of architectural stile and rail door. Custom grade is most commonly specified when a normal degree of quality control is desired, or when a mill option paint grade is necessary. Premium grade doors may be specified for projects with a high degree of visibility. "AA" grade panel faces are required for premium grade panel doors. "A" grade panel faces are required for custom grade panel doors.

What the Architect Must Ask

When the ANSI/WDMA I.S. 6-A-01 door standards are referenced as part of contract documents, and no grade is specified, custom grade will be delivered. It is expected that architects shall:

- Specify species and type of cut (if other than plain sliced).
- Specify whether panels are to be raised or flat, rim-banded or membrane pressed.
- Specify the fire-resistance rating, if required, as 20,45,60 or 90 minutes.
- Specify construction details and/or door types as appropriate.
- Specify non-standard stains, colors and finishes.

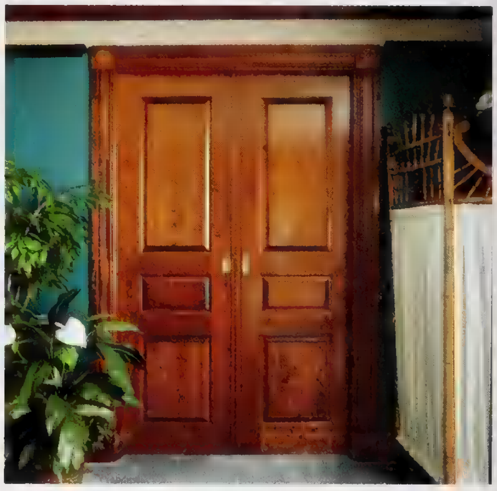
It is critical for designers to understand, or to consult manufacturers for advice, on how various veneer patterns can change the appearance of architectural wood doors. Final appearance is dependent both upon how the veneers are machined and how they are matched across the panel face.

A rotary cut follows a tree's annual growth rings and results, generally, in a random appearance. A plain-sliced, or flat cut is sliced parallel to a line through the center of the log. Quarter-cutting produces a series of stripes that vary in width in differing species.

Architects can be confident that the engineered architectural stile and rail door is not easily discernable from a solid lumber door, even as to weight. A "typical" 3-0, 7-0, 1-$^3/_4$-in, six-panel door weighs about 85 pounds, roughly four pounds per sq ft. A solid pine door will be slightly lighter; hard rock maple slightly heavier. A typical door of engineered construction will be somewhere in the middle.

Quality, high-end architectural stile and rail doors are seen today in hospitals, country clubs, law offices, and high-end homes worldwide. They are used increasingly in historical renovation projects because they offer the design professional greater flexibility in the end product. Many WDMA manufacturers produce made-to-order stile and rail doors in a wide variety of panel types. Today's manufacturers can match a specific historical style with regard to mouldings, door layout, panel configuration, wood species, or any combination, in doors engineered to last a lifetime.

Cherry doors grade the entrance to the men's lockers at the Golf Club of Oklahoma.


Cherry rim banded pocket doors adorn this residence.

Better Ways to Make a Door

The "revolution" that has seen growing numbers of installations of architectural stile and rail doors in commercial buildings is due in part to a search by manufacturers for "better" ways to make a door. "We are always in relentless pursuit of better and less expensive materials," says one manufacturer. "We test adhesives. We conduct pull and shear tests. Cycle-slam testing simulates thousands of opening and closings of a door to test its durability, and it's effectiveness in the real world. We test the screw-holding ability of different cores."

Manufacturers, driven not by code, but by owners' expectations, are developing "quiet" stile and rail doors that can, for instance, assure private conversation in office settings or lower the transmission of heating and cooling system sound in condominiums. Doors are sold with a "sound transmission classification" that expresses their ability to contain sound. Sound attenuation has been accomplished in the past largely through gaskets between the door and frame, but engineered stile and rail doors give manufacturers new ways to combat sound through construction methods that maximize both acoustical dampening and air space within the door and reduce vibration. In some cases, sound dampening is achieved through specialty door bottoms, which can be surface applied, half-mortised or fully mortised (concealed) in the bottom of the door. The sound transmission test method is ASTM E90-90.

Research has also led architectural stile and rail door manufacturers to development of bullet-resistant doors, manufactured through a combination of specialty core materials and adhesives.

"Engineered construction has opened the door to a variety of solutions to long-standing problems," says one manufacturer. "Different construction methods, differing core materials and new adhesives can be combined for a number of specific purposes in ways we have never been able to before. And we can now do so without sacrificing appearance."

Development of new construction techniques means the new architectural stile and rail doors can now be used in places traditional stile and rail doors could not—dormitories and high-rises, for instance.

Click for Additional Information

Go to *www.archítecuralrecord.com/CONTEDUC/ConteducC.asp* to learn more about architectural stile and rail doors including general requirements and finishing options. Test questions related to the online material are included below.

Learning Objectives

- *Recognize the benefits of architectural stile and rail doors and their relationship to traditional solid lumber stile and rail doors.*
- *Understand how to meet code requirements for fire safety with contemporary stile and rail doors.*
- *Know the architect's responsibilities when ANSI/WDMA I.S. 6-A-01 door standards are referenced in a contract.*

Instructions: Refer to the learning objectives above. Complete the multiple choice questions below. Then go to the continuing education reporting form on page 229. Include the answers to these questions on the reporting form. Follow the instructions on the reporting form carefully. Fill out the form and mail or fax it to the address provided to receive one AIA/CES Learning Unit including one hour of health safety welfare credit. You may also go to the continuing section on *www.architecturalrecord.com* to read the course, answer the questions, print out the reporting form at the end of the course, fill it out and mail/fax the form to the address provided.

Questions

Q: 1. How is it possible to achieve a 90-minute fire safety rating with a wood stile and rail door?
A: a. high-density, non-combustible wood core, utilizing fire-resistant adhesives
b. through the use of wire-glass inserts
c. use of structural composite lumber cores
d. using OSB in both stiles and rails

Q: 2. Staved lumber core, long the standard core, is being replaced by what?
A: a. structural composite lumber cores
b. solid wood
c. aluminum cores
d. extruded plastic panel liners

Q: 3. When specifying architectural stile and rail doors, it is the responsibility of the architect to:
A: a. specify the cut if other than plain-sliced.
b. specify whether doors are to be rim-banded or membrane-pressed
c. specify non-standard stains, colors and finishes.
c. all of the above.

Q: 4. The listed advantages of architectural stile and rail doors over solid wood include all but:
A: a. faster manufacturing schedule
b. able to be specified in places with fire rating code requirements
c. incredible variety of veneers
d. increased dimensional stability

Q: 5. How can the characteristics of a wood door be modified to increase sound attenuation?
A: a. specialty thresholds
b. increased use of hardwoods
c. specialty adhesives
d. use of structural composite lumber cores

Q: 6. Architectural stile and rail doors weigh only about half of a solid hardwood door because:
A: a. air pockets are typical to engineered construction.
b. structural composite lumber contains cellulose.
c. the doors will accommodate only lightweight glass.
d. None of the above. The weights are approximately the same.

Q: 7. The cost of engineered stile & rail doors relative to solid lumber doors is:
A: a. about half
b. three times as much
c. roughly the same except for exotics, which are less expensive.
d. two-thirds.

Q: 8. Polyester finishes may be specified that have as much as ____-percent the hardness of glass.
A: a. 10 percent
b. 40 percent
c. 60 percent
d. 80 percent

Q: 9. Most appropriate for laboratory or industrial applications is a finish of:
A: a. polyester
b. tung oil
c. catalyzed vinyl
d. acrylic lacquer

Q: 10. Solid hardwood doors account for what percentage of overall U.S. production today?
A: a. 10 percent
b. 30 percent
c. 25 percent
d. 19.4 percent

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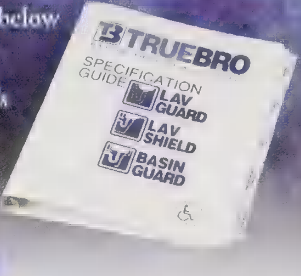

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Digital Practice

IN THIS SECTION: New object technologies [page 161] and how extranets are (or aren't) catching on [page 162] • Pervasive computing environments, and why architects should care [page 165] • Digital Architect focuses on printing and plotting [page 171] • Review of Architectural Studio, Autodesk's software for early-stage design thinking [page 177]. *Deborah Snoonian, P.E.*

BYTES

Graphisoft is holding an ideas competition for the design of a proposed conference center on the site of its headquarters in Budapest, Hungary. The center would host architecture-related exhibits and events and would be the first known structure situated over the Danube River. For more information, visit www.graphideas.com.

The Silicon Valley AutoCAD Power Users Group, the largest local user group in the U.S., awarded Revit Technology Corporation's 3D design software their 2001 "Best of the Best CAD Software" award over several Autodesk products.

Last fall, Texas A&M built a wireless design-build studio that lets students in architecture and construction science connect to the Internet via laptops. Instructors say collaboration among the disciplines was "significantly enhanced" by adding wireless technology.

LightWork Design, maker of the industry-leading LightWorks rendering engine, has released LightWorks Sketch for architects who want to provide stylized, nonphotorealistic images of their work. The new software supports the Epix file format from Piranesi's popular rendering program.

Three professors from Texas Tech's College of Architecture will produce the first-ever architectural drawings of the Statue of Liberty. They used a Cyrax 2500 laser scanner to collect more than 500 million measurements of the statue's surface for 3D digital modeling in Paraform and Innovmetrics. The 2D drawings, which will be done in AutoCAD, will conform to the documentation standards of the Historic American Buildings Survey.

Objects to See vies to become standard object technology for CAD

For the past few years, objects and object technology have been hot topics of conversation as ways to make CAD drawings more intelligent. Although several object file formats were developed throughout the 1990s, none has yet enjoyed widespread acceptance as an industry standard. This may change with the advent of Objects to See, or o2c, a highly compressed 3D file format developed by the German firm mb Software specifically for Internet-based communication. "More than ever, o2c is making 3D feedback more immediate and meaningful," says James Horecka, AIA, an architect practicing in Winchester, California.

In the same way that the portable document format (PDF) files have become universal for online viewing of printed documents and forms—such as tax returns and reports with lots of charts and graphics—"o2c will become the 3D PDF," predicts Richard Morse, AEC product manager of the DataCAD product line.

DataCAD has hitched its wagon to this technology by allowing direct import and export of o2c-formatted files from its programs. While other major CAD vendors have yet to follow suit, free utilities are available to convert Autodesk's 3D Studio objects to o2c. Similar converters for the DWG format are soon to follow. In addition, a free o2c player for Microstation users was recently released.

But the real beauty of o2c is that it requires no specific CAD program to view, manipulate, or render 3D CAD objects or models. Just as the PDF file format grew in popularity due to the free and widely distributed viewing program Adobe Acrobat Reader, o2c files can be viewed with an o2c Player, a free plug-in utility (only 500 kilobytes in size) for Web browsers that can be downloaded from www.o2cworld.com.

At only 19 kilobytes—the size of a short e-mail—this o2c model file can still be shown in alternate modes, such as with a transparent roof, seen in the lower view.

IMAGES: © EVAN H. SHU, FAIA

Although o2c is only one of several object file formats in use—others include VRML, DXF, DWG, and 3D GIF—it has some persuasive advantages over these alternatives. First, it creates extremely compact files that make it very practical to attach to e-mails or post to Web pages for quick download. A full model of a house, for instance, might be less than 100 kilobytes in size (see illustration of Le Corbusier's Villa Savoy, left). Second, the user interface for the o2c viewer is easy to use, employing familiar click-and-drag movements. Third, the o2c file is a versatile format that can host a lot of annotated information, such as specification links or display options (e.g., alternate cabinet-finish displays or lighting options for a kitchen design). "Now we e-mail our clients a 3D model of their building so that they can have a real-time virtual walk-through of their new offices—no special software required," says Warren Payne of Ashton Mitchell Architects in Auckland, New Zealand. He adds, "What's more, the size of the o2c files is miniscule."

The file format also has heavy backing from industry leaders. Microsoft has integrated o2c into its Word and PowerPoint programs. Electronic models of Velux and Andersen windows are now widely available in o2c format. And IBM is banking on o2c for its e-commerce applications. These supporters will likely keep o2c in the forefront in the coming years.

The same features that make o2c appealing for e-commerce also make it appealing for architects and their clients. For example, o2c allows people shopping for a Ferrari to go online and view various models of the car in o2c-animated format while choosing an an exterior paint color and interior finishes; in the same way, architects may soon be sending their clients designs with instant-click options such as “View with screened porch option” or “View with brick exterior option.” Architects and their consultants will also benefit by using conferencing software to review o2c models online, with ready tools such as redlining, multiple design overlays, and dynamic cross sections to facilitate their discussions.

The best news for architects is that o2c gives them another CAD tool for design assistance and client communication—even for smaller firms and solo practitioners whose resources for technology investment are limited. “I'm loving it for quick checks of parts of things as I develop them in 3D,” says Horecka. “Work a little, check it out in o2c, see where improvements might be made, then work a bit more, check it out in o2c— it's really proving fast and handy.” Fast, handy, and putting the power of object technology to work. *Evan H. Shu, FAIA*

Extranet use among architecture firms is hampered by skepticism

The use of extranets among architects doesn't appear to be increasing as quickly as predicted just a couple of years ago, and analysts and industry insiders say it's because firms are reluctant to adopt advanced Internet technologies—a symptom of a fragmented, conservative business culture that fiercely protects its turf and methods.

Yet this reality hasn't dampened the enthusiasm of companies like Constructware and Buzzsaw that outlived the dot-com collapse. [Note: RECORD publisher McGraw-Hill invests in e-Builder, another extranet company]. If anything, these outfits see themselves in better shape than ever.

The benefits of extranets seem obvious. Everyone on the project team can work from the latest set of CAD drawings, and there's a record of e-mails and other documents for all to see; in doing so, they smooth out communication and create a reliable paper trail. In a client study commissioned by Constructware, 65 percent of respondents said the vendor's products were significantly or critically important in reducing claims and litigation.

Although there exists no comprehensive study on extranet use in design and construction, anecdotal evidence suggests engineers and contractors have adopted the tools faster because they usually stand to gain more than architects from the streamlined communications that extranets provide. But the sales pitches have worked at least once for many architecture firms, as well. About 80 percent of firms with 50 people or more, and nearly half of all firms, have tried an extranet in the past two years, according to AIA's *Firm Survey 2000/2002*.

“[Architects] certainly need to know this is the future,” says Scott Unger, founder and president of Constructware. “This is how they'll manage their information and communicate with team members.”

ARCHITECTS ARE STILL UNCERTAIN IF USING EXTRANETS WILL PAY OFF.

Even so, skepticism remains among firms both large and small. Jill Rothenberg, Assoc. AIA, principal and chief technology officer at ADD in Cambridge, Massachusetts, says contractors often have their own systems to track change orders and submittal logs; using an extranet required them to enter the information twice. Haden Smith, AIA, CAD manager for Chiodini Associates in St. Louis, has been with his 30-member firm for nine months and has yet to use an extranet. And Geraldine Pontius, AIA, a sole practitioner in Baltimore, had trouble when her client, a Maryland state agency, couldn't handle the technological demands of the service. “The most important people on the team couldn't see the files,” she says.

But Yangwei Yee, AIA, an associate partner at Skidmore Owings & Merrill, and Neil Katz, an associate with the firm's IT group, say extranets have been helpful. “We've had a lot of success with [ProjectPoint],” says Katz. “It's much more efficient than FTP or e-mail.”

Part of the disparity in opinion is related to firm size. Smaller firms have difficulty absorbing the costs of the services—which can run up to $6,000 a year—and must pass them on to their clients.

Another reason is turf battles. “I'm in charge of managing the material from the architect and the owner,” says a project manager at Walsh Group in Chicago who requested anonymity. “I'm not sure I would trust that to anyone else.”

Firms are also doubtful that the extra work and training required for using extranets will pay off in time saved on projects. “If [extranets] all failed tomorrow, architecture would still happen,” notes Paul Doherty, AIA, managing director of The Digit Group, a technology consultancy for owners. “If you pulled the plug on CAD, that would be a whole different story.”

The good news for vendors is that many owners are demanding extranets as part of any bid package. This will speed adoption faster than the industry would do on its own. “It's one thing to implement technology, it's another thing to change behavior,” says Doherty. “Extranets may be a little ahead of the curve.” *Chris Allbritton*

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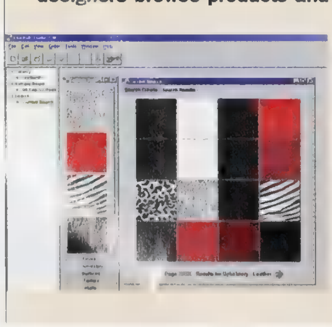

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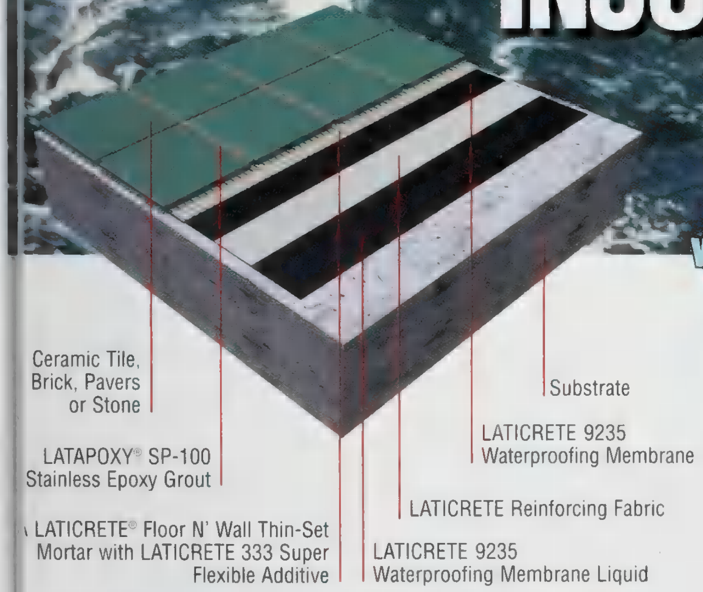

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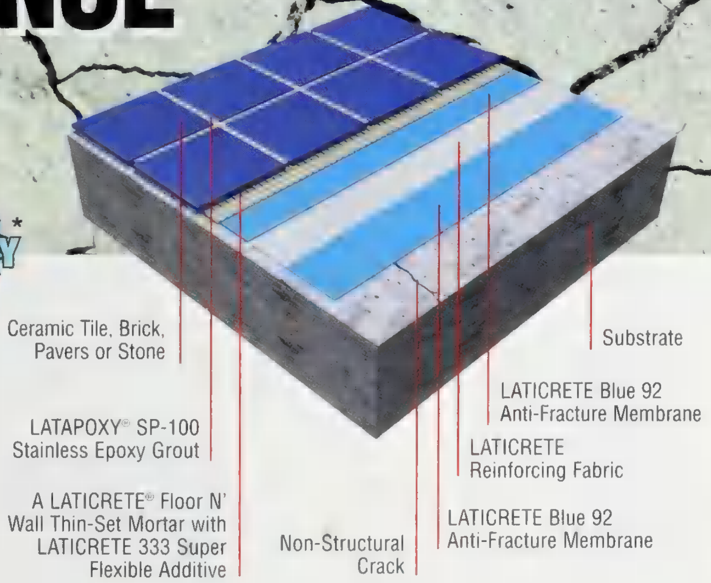

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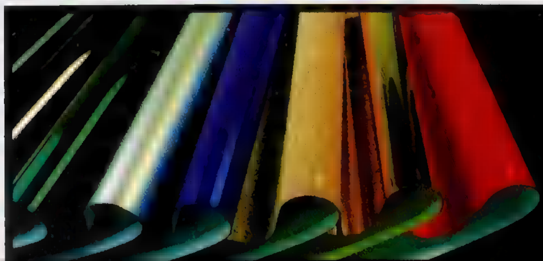

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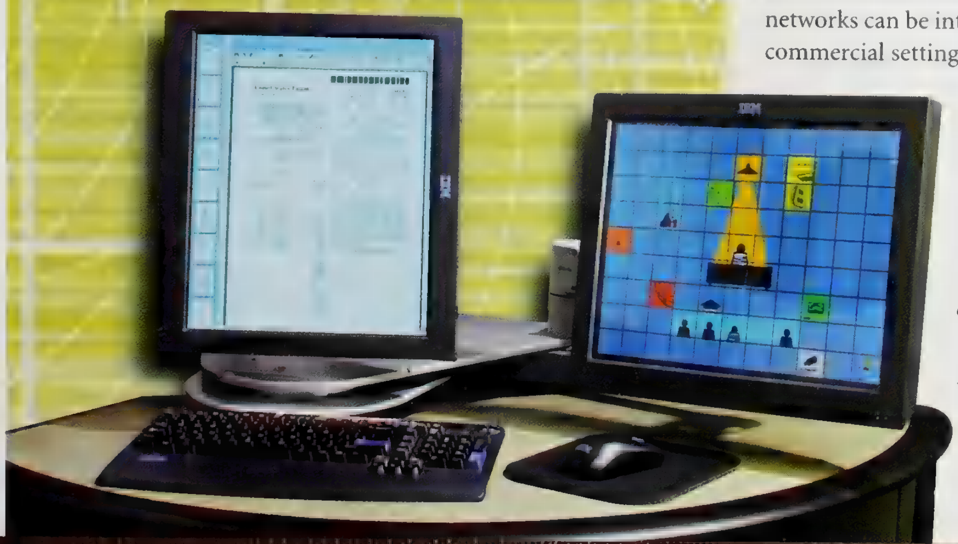
Space Invaders

PERVASIVE COMPUTING TECHNOLOGIES PROMISE TO REVOLUTIONIZE THE WAY PEOPLE USE BUILDINGS—AND HOW ARCHITECTS DESIGN THEM

By Jacqueline Emigh

Imagine, if you will, an office space dotted with collaboration-oriented cubicles, each one digitally controlled by its occupant. Glancing across the office, you see rows of color-coded status lights above the cubes, indicating whether its occupant is in or out—and if in, busy or available. Within each cube is a large touch-sensitive screen, which acts as the primary display for the occupant. Projected onto walls, tabletops, and floors are secondary touch displays that might include Web pages, user-selected screen savers, photos, and even videoconferences. Together, these displays and devices help workers create personalized environments for their daily tasks.

If this sounds like a futuristic fantasy or a dot-com utopia, it isn't. Together with office-furniture maker Steelcase, IBM has already shown the new BlueSpace office concept to more than 300 prospective customers at lab facilities in New York and Michigan. Beta testing is expected to start this summer. Meanwhile, organizations ranging from Cisco Systems to MIT and Georgia Tech are creating their own prototypes, presenting varied visions of how pervasive computing technologies such as sensors, handheld organizers like Palm Pilots, LEDs, and wireless networks can be integrated into the built environment in residential and commercial settings. The presence of these technologies is changing the way people use their offices and homes—and it will no doubt affect the way architects design them.



Making work feel like home

The ubiquitous, customizable nature of pervasive computing devices is blurring the distinction between residential and commercial spaces, giving employees more control over what their offices look

Jacqueline Emigh, a freelance journalist in New York, has written about technology for more than 12 years for leading trade, business, and consumer publications.

IBM and Steelcase's BlueSpace (previous page and above) will let workers customize their workspaces with digital content.

like and how they function. Through the use of embedded sensors, BlueSpace lets workers control temperature and lighting in their offices from their computers, or even remotely. "If you forget to turn off the heat in your office when you leave for the weekend, you can always take care of it when you get home," says Jennifer Lai, usability expert for BlueSpace.

Commercial spaces serve more people than individual homes, so more types of needs have to be addressed, says Lai. With BlueSpace, IBM and Steelcase are attempting to overcome problems with office cubicles that affect employees and employers alike. Companies want to make sure their employees can be productive in cubicles, something that has long concerned workers, as well. In focus groups that IBM put together for the BlueSpace project, workers' primary complaints were that "they can't customize their cubicles; they don't have any windows; they can't meet with others; and they can't get privacy from interruptions for doing 'heads-down' work," says Lai.

These concerns inspired IBM to develop BlueSpace's secondary display so that workers could enliven their cubes with still pictures, streamed video, or other digital content of their choice. Known as the Everywhere Display, the system uses LEDs to project images anywhere in the cubicle. Wireless sensing technologies allow for touch sensitivity, letting people use their fingers as cursors—even on walls and tabletops—to navigate the interfaces.

For creating flexible meeting spaces in the BlueSpace environment, Steelcase developed the Monitor Rail, a highly configurable tabletop that traverses the entire length of the cube, enabling workers to sit by themselves or with collaborators just about anywhere in the space.

Researchers at IBM expect to add speech recognition in office environments—but in limited doses, to keep noise levels down. "We don't want employees talking to everything in the office," quips Lai.

Blending work and home duties

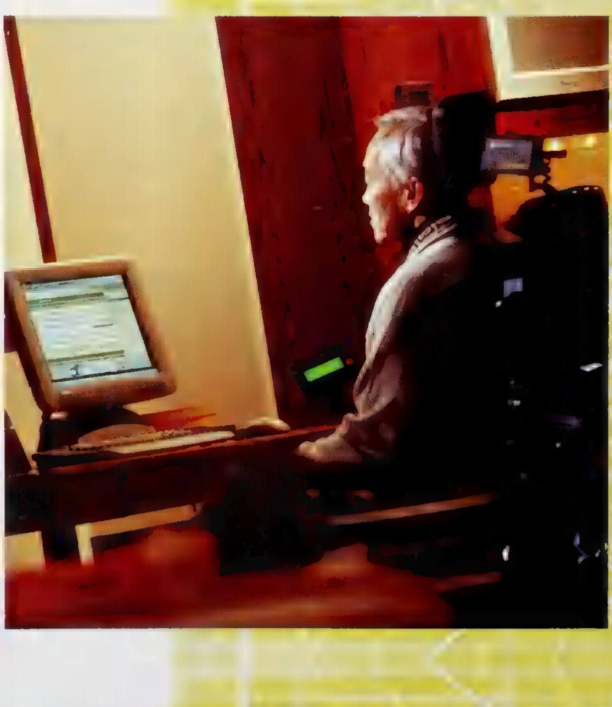
The deepening convergence between residential and commercial spaces can be seen, as well, at Cisco Systems' headquarters in San Jose, California. In a warehouse building on company grounds, Cisco has jointly located two prototype facilities, the Internet Home and the Mobility Center, which showcase various types of wireless technology and Internet connections for managing tasks at work and at home.

The 700-square-foot Mobility Center depicts pervasive computing options in three prototype venues: a hotel room, an airport lounge, and a coffee shop. The hotel room relies on a long-range, broadband Ethernet connection, while the airport lounge and coffee shop showcase Cisco's Aironet wireless technology. "When people walk out the door at home to go to work, they're not necessarily going to an office anymore—but you can still be just as connected and productive," says Rob Springer, Internet Home manager for Cisco. "We think merchants [like hotels] will find that high-speed Internet connections will attract clientele," he adds.

The Mobility Center is linked to a 1,700-square-foot Internet Home, which showcases Cisco's Internet technology working in concert with devices donated by Compaq, Honeywell, and other companies. In the home, they use Internet phones and Compaq's handheld organizer, the iPAQ, to manage home systems ranging from "nanny cameras" to heating to living room drapes, either from the home or from one of the prototype Mobility Center areas. In other words, no matter where you are, you can take care of your job and your house—or, preferably, both.

Staying healthy at home

Though much of the emphasis in pervasive computing is on worker productivity and convenience, other efforts focus on home-based health care and wellness. IBM's prototype home in Austin, Texas, the Networked



Research in telemedicine aims to help diagnose illnesses, remind people to take medications, and monitor health and wellness in the home—especially for the elderly.

PHOTOGRAPHY: © IBM (TOP); CISCO SYSTEMS (BOTTOM); IMAGE © MICHAEL MCDONOUGH, AIA (OPPOSITE)

Home, is investigating telemedicine for rapid on-site diagnosis so that people can avoid unnecessary sick days or trips to the doctor. "We're working on ways of taking pictures of the inner ear," says Bill Bodin, who heads up IBM's Pervasive Computing Lab in Austin. "One false earache can keep a parent at home needlessly."

Another research effort on home systems is MIT's House_n, a project overseen by the school's Department of Architecture. Researchers are eyeing two possible sites to build a prototype for their so-called electronically mediated house: a rooftop at MIT, or a single-family lot in Cambridge, Massachusetts. The technologies in the house will focus on health care, says Kent Larson, director of the project, "although there will also be some implications for energy usage," he adds. "We'd like to use early detection systems to encourage medication compliance, for example. We'll also look at 'just-in-time' information and delivering the right message to the right device." Innovations springing from this work might help aging baby boomers live at home longer instead of moving to nursing homes and assisted-care centers, predicts Gregory Beck, AIA, an architect who teaches at the school.

Sensing technology will be used to detect both objects and people in House_n for various monitoring purposes. Instead of cameras, however, MIT will use noninvasive sensors such as computervision and radio frequency (RF) tags, miniature wireless devices that can be detected through walls, clutter, and other objects. MIT is also working with IBM on a set of new display technologies, including the Sensetable, a digital table that recognizes what objects are placed on it.

LINKING SMART-BUILDING SYSTEMS WILL REMAIN A CHALLENGE FOR ARCHITECTS AND TECHNOLOGY COMPANIES.

MIT's pervasive computing efforts aren't limited to houses alone, though. Within its "Changing Places of Work" project, researchers will collect workplace activity data, with the aim of developing a "typology of work" that will be used to design a spectrum of workplace environments, which may also have implications for residential design.

Georgia Tech is sponsoring a major residential research project—the Broadband Institute Residential Laboratory, also known as the Aware Home, a retrofitted 5,040-square-foot house near the school's campus. An overriding goal, according to the project's Web site, is to create a home that is able to "know information about itself, as well as the whereabouts and activities of its inhabitants." In one research initiative, "Aging in Place," researchers are programming the Aware Home to track a senior adult's behavioral trends to augment their memory and senses and identify health emergencies, automatically contacting assistance services as needed.

Making it all work together

Despite the proliferation of research projects and the ever-increasing sophistication of pervasive computing techniques, both architects and technology developers still face a number of hurdles as they consider what kinds of systems to implement, and how. One of the first of these challenges is the integration and improvement of security systems in commercial structures in the post–September 11 era. Companies are scrambling to figure out how to extend the capabilities of wireless security through integration with other building systems and information. IBM is already testing a smart-card system that makes computer applications or documents containing sensitive information "disappear" from a monitor or other display device when unauthorized people approach the computer. Meanwhile, companies in the wireless access control area are working to add fingerprint-reading and facial-scanning functionality and to integrate smart-card systems with digital video cameras.

USING TECHNOLOGY AT HOME FOR SAVING ENERGY, NOT CHANGING CHANNELS

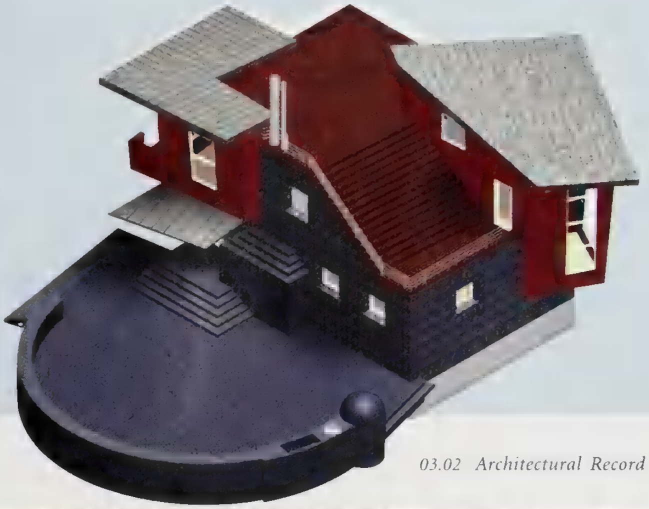
Michael McDonough, AIA, advocates using smart-building technology at home—but one of a different stripe. "Most smart-home systems emphasize entertainment and convenience," he explains. "And consumers will spend lots of money on entertainment systems and such, often to their later disappointment, because the systems are too complicated to use or maintain or upgrade. Why bother? If you invest in technology to gain efficiency rather than convenience, it'll earn its keep in the long run."

The architect is building E-House 2000 (shown below), a residential project he designed in rural Stone Ridge, New York, to demonstrate how wireless computing and monitoring technology enable energy-saving features and systems like radiant cooling and passive solar heating. Sensors will be used to track "the vanilla stuff" like temperature, says McDonough, along with humidity, heat gain, and even ground freezing near critical underground systems that could be damaged by frost.

The sensors will monitor the parts of the house most prone to failure or poor performance, like drains and flashings. "Some of the problems of past green buildings are well known," McDonough says. "With radiant cooling, you get condensation on the ceiling once you reach the dew point, so you have to make sure the indoor air is dry enough, or else you have to put in collection panels. And you can get cracking around windows due to thermal bridging, because the R-factor of glass is so much lower than the surrounding walls." Information from the sensors flows to supervisory control and data acquisition (SCADA) software that will alert him to potential problems, and either automatically adjust systems to work optimally in concert or let him manually turn on dehumidifiers, lower window shades, and make other adjustments from a home computer.

Cantilevered sections of the house with north-facing windows are built of steel rather than wood. McDonough says he will monitor the insulation around the steel to add heat as needed, to avoid the problems that often hamper steel's performance in cold climates. "I wanted to use steel to create a light, clean, modern look," he says. "Green building doesn't have to be all brown rice."

"There's no magic bullet here," McDonough says of the extensive monitoring and management system in the house, which he'll live in once it's complete later this year. "There's always the potential for failure or poor performance of building systems. But this stuff helps." *DS/JE*



Another challenge is integrating emerging technologies with existing building materials and methods—and with each other. "Systems in buildings are completely separate and proprietary [today]," says MIT's Larson. "The lighting system is separate from the security system, and both are generally overlaid onto a very low-tech and primitive enclosure." Adoption of design-build models and plug-and-play environments could hold the key to future progress in enabling buildings to become smart, comfortable, and user-friendly. "Design-build could free up architects to think more about design again," Larson says.

Architects and technology developers must also keep up with new materials that hold promise for changing how buildings and technologies function. Deborah Chung, an engineering professor at the University of Buffalo, is developing a new type of concrete that contains short, electronically conductive fibers. "The concrete is able to act as a sensor," says Chung. "It can sense its own stress or damage. It's also useful in suppressing vibration. If used in the floors of a multistory building, it might sense where all the people are." Such a material could potentially reduce or eliminate the conduits and wiring systems now so commonplace in all types of buildings. And W. Keith Edwards, a lab researcher at Xerox's Palo Alto Research Center, predicts that if wireless networks continue to become more popular, brick might even become an obsolete building material—it tends to block out wireless signals.

Designers also differ over how—or if—pervasive computing should affect the way their buildings look, although they generally agree that gadgetry should be as unobtrusive as possible. "People don't like to have a lot of technology hanging around," says one Georgia Tech spokesperson for Georgia Tech's Aware Home. "We've had TV crews [filming] in here, and they've asked, 'So where's the technology?' "

For his part, MIT's Larson hopes for a future of architectural "mass customization" in which people can easily swap out well-designed components of their houses or offices when newer, better ones become available. "By then, it will no longer be the case that architecture is largely fixed, and technology is ever-changing. Instead, architecture and technology will both be ever-changing," Larson says. ■

Cisco's Internet Home features Web pads that let people control entertainment and security systems as well as overall ambience such as lighting and temperature.

COMING UNWIRED: PERVASIVE COMPUTING AND THE ARCHITECTURE OF THE CITY

Pervasive computing technologies—always on, embedded in the physical world, miniature in scale, wireless, and networked—may represent the biggest technological transformation of everyday life since the invention of the computer itself. It will turn the virtual reality model inside out: If the former goal was to make computer environments lifelike, now our surroundings will function as a series of overlapping digital networks—reality as embodied virtuality. Our desktop computers, which comprise just two percent of all computers, will grow more obsolete as digital capabilities are scattered and linked throughout our entire environment.

Not surprisingly, funding for this technology's development has come primarily from military and commercial interests; the Oracle Corporation, for instance, offered to build a national security database for digital identification cards for U.S. residents. Likewise, increased security threats in the post–September 11 era have accelerated pervasive computing's evolution. Together, the sponsors and the urgency leave the public with less time for substantive debate about emerging technologies.

This is unfortunate, because pervasive computing will have profound consequences for cities, building systems, architectural practices, and everyday life. Some current applications are inarguably good: Pervasive building systems technologies can monitor seismic action, detect or correct structural failure, or regulate natural light and ventilation. These capabilities represent significant progress in energy conservation, building science, health, safety, and welfare.

But perhaps the most dubious trajectory of pervasive computing concerns surveillance. On a typical day in Los Angeles, it is estimated that individuals are filmed by 35 cameras, mostly for security purposes. Though few of these systems are integrated with useful data (e.g., photographs of known criminals), scanning for particular faces or racially dominant features is entirely possible. One can imagine the potential misuse. Since September 11, there have been proposals for 100 new surveillance cameras in Times Square, and parts of Salt Lake City could supply ample footage for each Olympic visitor's home movies. A chilling effect on public behavior is what law enforcers intend: The average Briton is filmed some 300 times a day, for instance, yet police admit no terrorists have been apprehended by this measure. They insist instead that crime prevention has been the principal result.

Do we condone the transformation of an ever-aspiring open civil society into a surveillance society? As public space becomes privatized through the apprehension of personal information for uncertain purposes, deviance and difference are dislocated to a further marginalized underbelly of the city. Though we might sometimes be relieved by this migration (potential muggers are discouraged by the presence of surveillance cameras), in other circumstances, public life is stifled. Would an AIA officer attend a gay rights march? Would a Microsoft employee join a protest at World Trade Organization meetings?

As architects, we can envision pervasive computing's ability to transform our task. There are aesthetic, programmatic, technological, communications, and safety implications that can become creative resources: Imagine a school that can automatically close its playground if security is at risk, animate classroom walls with digital resources triggered by children's questions, and keep the neighborhood informed of an energy conservation project through real-time displays. Architects have the opportunity to actively intervene so that the shape pervasive computing eventually takes is informed by our professional sensibilities. Only then can we guide rather than react to this emergent technology's impact on urbanism and architectural form. *Dana Cuff*

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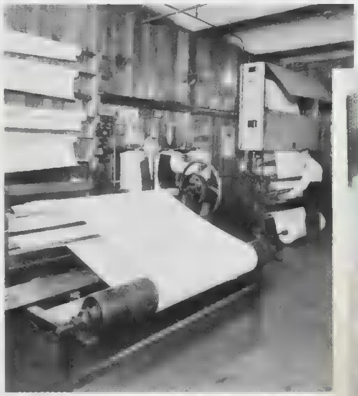
Tech primer: printers and plotters

By Jerry Laiserin, FAIA

Getting CAD documents, specifications text, or rendered images out of the digital realm and onto the physical media of bond, vellum, or Mylar is no trivial task. Successful printing and plotting require a coordinated assortment of software for preprocessing the digital material to be printed, hardware for the physical output, and optional add-on software and third-party services.

HOW IT WORKS: Dots and lines

Clicking the printer icon on a computer screen launches a complex sequence of internal software preparations. The process starts with a program called a printer (or plotter) driver, which harnesses the electronic bits whizzing around inside the computer and aligns them in a printer-specific way—different from the way that bits are displayed on screen. The vectors, or x-y lines, that make up a CAD file or a Postscript (PS) file for desktop publishing must be converted into a raster, the arrangement of horizontal rows of dots that most plotters and printers use to put pigment on paper. Along with this raster image processing (RIP), other software for anti-aliasing smoothes what would otherwise be stair-step "jaggies" where curved or angled lines and text characters span the printer's rows of raster dots. If a color file is being printed, the computer's internal red-green-blue (RGB) color representation gets translated into a grayscale for black-and-white printers, or into the cyan-magenta-yellow-black (CMYK) color representation that most color plotters and printers use.



Cumbersome old blueprint machines have given way to sleeker output devices like the HP Designjet 1050c Plus.

CAD output imposes additional demands. All the popular architectural CAD programs store design information in an internal database or model; each has its own means of extracting, exporting, or reporting scaled orthogonal views (plans, elevations, and sections) of the model onto paper-friendly arrangements called viewports, layouts, or paper space. Most CAD program output settings include pen tables, lists that correlate on-screen line weights to the thickness of printed lines (equivalent to the width of technical drafting pens).

Printing and plotting consumes lots of memory and processing power, which is handled by the hardware in a computer, a printer/plotter, or a network device called a print/plot server. Many printer/plotters have computer processors and memory built in; some even have their own internal hard drives to handle multiple print jobs.

The features

Now that modern raster technology has displaced the impact printers and huge pen plotters of yore, there is little clear-cut distinction between printing and plotting. Many people still associate plotting with large-size output, such as the popular D and E sizes, but the same hardware often serves as a wide-format printer, with the substitution of different driver software. By the same token, devices that print letter, legal, and 11-by-17-inch paper are usually sold as printers but serve well, with the right drivers, for half-size check plots.

The size of a printer/plotter's ink or toner imprint is measured in dots per inch (dpi); the more dpi, the higher the resolution and the better the resulting image quality. Maximal print resolution ranges from 600 dpi to 2,400 dpi; most devices offer a low dpi setting for faster, lower-resolution printing in draft mode.

The other important distinguishing features among printers and plotters are output speed (measured in pages per minute [ppm] for printing or square feet per hour [sq.ft./hr.] for plotting); the cost of expendables (e.g., ink refills, replacement print heads for inkjet printers, toner cartridges or refills for laser printers); and overall cost. Larger-format devices, and those that print faster and at higher resolutions, generally incur greater

Contributing editor Jerry Laiserin, FAIA, provides strategic consulting services to architects and their technology providers.

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costs than do smaller, slower machines.

WHAT TO LOOK FOR: The basics

Hardware and software to print or plot letter-size sheets with acceptable resolution and color fidelity can cost as little as $200. High-speed, high-resolution, large-format Postscript and CAD-cable printing/plotting systems can cost as much as $20,000, while the heavy-duty, high-volume setups used in reprographics shops approach $200,000 in cost. Faced with such a vast spread in price and functionality, how can architects minimize the risk of overspending—or underestimating costs—when choosing the most appropriate devices for their practices?

According to Michael Horta, president of Computers in Design, a design technology consulting firm in New York City, the best way to narrow the field is to carefully assess the plotting tasks to be performed (see sidebar, above right, "Printing and Plotting: The Main Points"). Answering [illegible] questions helps firms zero [illegible] factors such as the required [illegible] speed of output. For example, [illegible] sq.ft./hr., an E size plotter (or [illegible]-inch-wide printer), running in best-quality mode, can produce a 100-sheet, one-color set in about an hour and a half, or one sheet per minute. While this is more than fast enough for many architects, such a plotter would unacceptably throttle other firms down to just five sets of prints in an eight-hour day.

Kyocera Mita FS-1800.

Canon SR-850E.

Firms that print fully rendered color images likely will want a high-resolution device (1,200 or 2,400 dpi), while those with little or no rendering requirements often can get by with a more affordable 600 dpi machine. Similarly, adding Postscript capability for full-blown desktop publishing can tack on 20 to 25 percent to the cost of a given printer—so adding that function to a $499 letter-size printer may be more sensible and cost-effective than adding it to a $4,999 wide-format machine.

More tips

Horta points out that the criteria that can be determined from manufacturer's spec sheets (resolution, print speed, and so forth) represent only part of the picture for smart shopping. For example, because CAD and rendered image files require substantial preprocessing and consume large amounts of memory, Horta believes that the most cost-effective add-on for any printer/plotter is expanded memory. "Buy as much as you can afford, because it allows the whole file or job to go directly to the printer, without tying up your computer or your network. If necessary," he adds, "cut back on frills like optional printer stands, output trays, or automatic sheet cutters."

Printing and Plotting: The Main Points

What you need

- Do you need color output, or are black-and-white plots and grayscale images sufficient?
- Does your firm produce 3D renderings as well as 2D working drawings?
- How often do you incorporate images like aerial photos or existing-condition snapshots in your CAD drawings?
- How often do you incorporate CAD drawings in other documents, such as proposals and brochures?
- Do you generate mostly check plots (smaller size, typically non-reimbursable) or lots of full-size bid sets, contracts sets, and permit sets (typically billable to your client)?
- Is your staff located in a single office space, on multiple floors, or in multiple offices?

What to buy

For printing fully rendered color images, a high-resolution printer (1,200 to 2,400 dpi) is optimal. Firms that print few or rendered images can get by with a 600 dpi device.

Buy as much memory as you can afford. Printer memory has a large impact on performance; cut back on frills like optional printer stands or output trays if necessary.

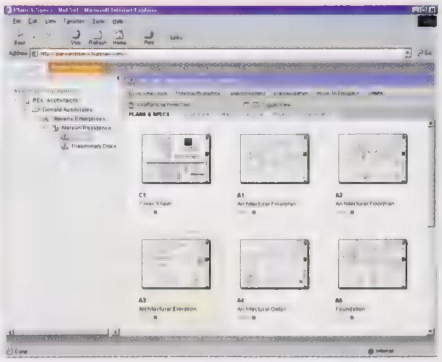
For wide-format printing, opt for a device with a roll feeder. Firms waste too much time and paper lining up individual sheets for printing.

Connect a shared printer to a computer dedicated as a print/plot server. Print speed and performance will drop if the computer is also used as a workstation.

HPGL (Hewlett-Packard Graphics Language) drivers show top performance for CAD output. Driver performance is critical for printing success; HPGL drivers, however, are only available for wide-format devices.

RECORD acknowledges Michael Horta, president of Computers in Design, for developing these recommendations.

Another feature Horta believes essential for large-format devices is the ability to handle roll media. "The amount of time and paper you waste trying to line up individual D- and E-size sheets in the machine isn't worth the savings from eliminating the roll feeder," he notes.



Plans and Specs organizes documents in an Internet repository for future print orders.

Horta also takes into account the way the device connects to a network. Virtually all these machines include the traditional "parallel" printer cable connection that works with almost any PC and operating system software. (Apple Macintosh computers and networks have their own special connection requirements, although DataViz MacOpener allows printing Mac files from PCs.) Newer small-to-medium format printers often include the faster universal serial bus (USB) connector that works with Windows 98, 2000, and XP, as well as most recent Macs. However, both parallel and USB inter-

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face printers still must connect to a PC that is connected to the firm's network. If the printer is shared, and the connected PC also serves as someone's workstation, performance will suffer. Instead, Horta recommends connecting output devices to a networked PC dedicated as a print/plot server. "The oldest, slowest PC in the office will do just fine—its electronics are still much faster than the mechanical action of the printer," he explains. "If the printer has a lot of on-board memory, the best way to connect to the network is with a direct network connection built into the printer, such as the Hewlett-Packard Jetdirect interface card."

The performance of a software driver is a critical factor in overall printing/plotting success, especially for CAD output. Horta says, "The best driver for CAD in terms of speed, quality of line weights, and ease of setup and so on is HPGL." This is Hewlett-Packard Graphics Language, a vector standard developed by HP for its own plotters. Most other plotter manufacturers, such as Xerox Engineering Systems (XES) and Encad (recently acquired by Kodak) offer HPGL emulation, although the de facto HPGL standard helps to explain HP's dominant market share for CAD plotting. Horta is critical of printer manufacturers, including HP, for not making HPGL available on smaller-size printers. Like many CAD gurus, he speaks wistfully of the HP Laserjet4MV, a discontinued 11-by-17-inch black-and-white laser printer with HPGL that still serves as a workhorse for razor-sharp half-size check plots in many studios and project teams. The printer/plotter in Horta's CAD training room is an inexpensive Epson Stylus C-size color inkjet device that is no longer marketed but treasured for its HPGL emulation, which is not offered in current Epson models of that size.

Most CAD programs include their own plotter drivers or can print to the standard Windows printer drivers, but Horta wishes for the same HPGL features on small devices that are available for large-format output.

Hewlett-Packard's HP LaserJet 9000 series.

The extras

Unlike other segments of the computer business, plotting has attracted relatively few add-on programs. Horta identifies the most popular add-on as Squiggle, a software tool that generates plotted line styles that look like freehand drawings done in pencil, marker, felt-tip pen on cocktail napkin, or other line styles. Squiggle works with AutoCAD and AutoCAD-compatible output files from other PC-based CAD programs. A similar program, called Doodle, works with the Windows and Mac versions of Nemetschek's Vectorworks, while the Windows and Mac versions of Graphisoft's ArchiCAD create a comparable freehand look via that program's built-in LiveStyles.

At least as important as line work is the bottom line. Many architects want to recover plotting costs by assigning project codes to each print job for later billing. Several add-on utility programs are available for this purpose. Argos, from Sepialine [reviewed in RECORD, June 2001, page 199], SmartPLOT from Technesis, and PrintSuite from Infinity Squared are among the CAD-oriented contenders, although many firms rely on the cost-recovery features of Equitrac's PrintLog Professional. Some of these programs work with fax and copy machines, as well, and all help to manage multiple plotting jobs and multiple plotters, in addition to capturing the cost factors (size, media, and so forth) for each plot. In the past, architects resisted using plot-management software because it imposes an additional data entry step in the plotting process, when time often is of the essence. But the latest versions of these tools, especially Argos, make the chore less onerous.

AS FIRMS GLOBALIZE AND BECOME MORE COMPETITIVE, THEY WILL LIKELY OPT FOR IN-PLANT AND WEB-BASED SERVICES FOR LARGE PRINTING AND PLOTTING JOBS.

Canon BJ-W3000.

Many firms with substantial volumes of reimbursable plotting opt for an outsourced solution, in which their local reprographer provides equipment, media, expendables, and an on-site staff person to run the equipment in the architect's office. In this case, the firm receives a third-party invoice for reimbursement. This arrangement, called an in-plant, can be a cost-effective way to handle high plot volumes without incurring the up-front capital costs of a heavy-duty plotter, according to Lori Hason, vice president of National Reprographics, Inc. (NRI) in New York—one of the oldest and largest repro houses in the country.

Hason also points to a larger trend toward Web-based document management, including remote plotting on demand, services NRI offers through its own WebEDM service and through ReproMax, a consortium cofounded by NRI that now includes over 50 regional reprographers.

Other third-party document, plot-management, and remote plotting solutions include regional independents such as Docunet from Design Media Connections in Indianapolis; the nationwide PlanWell network from American Reprographics; Web-based eQuorum; PlanLink from Charrette; the Digital Print Room from CAD vendor Bentley Systems; and Autodesk Plans and Specs, part of their Buzzsaw extranet service. ■

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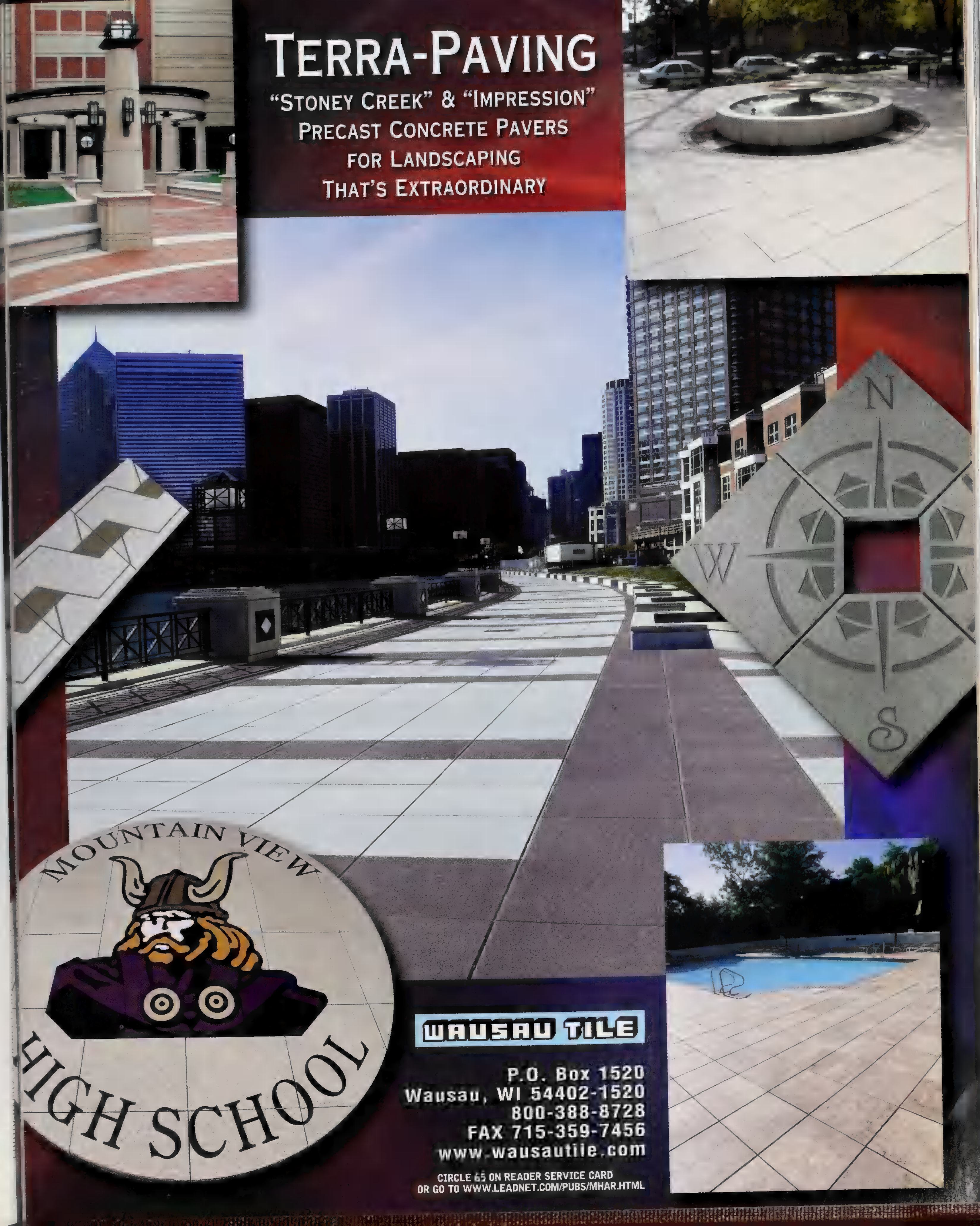

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Digital Product Reviews

Autodesk puts "design" back into CAD

By Jerry Laiserin, FAIA

Architectural Studio

Autodesk

A common division of labor within architecture firms has project architects using CAD software to produce construction documents, while designers and senior principals cling to drawing by hand, especially during the early design phases of projects. This dichotomy is often cast as a technological generation gap—but the real divide is between precision drafting and expressive drawing as communications media for different messages and audiences.

In paper-based architectural studios of yore, it was easy to sketch over carefully drafted plans or even photos, or to draft using a freehand sketch as an underlay. The introduction of CAD disrupted this paper-based transfer of information between different media and methods. Autodesk's newest software, Architectural Studio (ArchStudio, for short) promises to reintegrate design with documentation, starting with the earliest schematic and conceptual design phases that until now have not been entirely computerized.

Software imitates life

The program embodies a digital metaphor representing the traditional tools and work methods of architects. On-screen, you see a tray of electronic 2D drawing tools: rolls of tracing paper; a clutch of pencils, pens, markers, and brushes; an eraser; and so forth. There's also a tray of 3D tools that can be stretched, squished, combined, carved, or dragged into place on a 2D background. It is possible to extrude 3D shapes from 2D drawings, and 2D drawing tools can be used to mark up the surfaces of 3D objects. Snapshots of 2D or 3D work produced in ArchStudio can be digitally pinned up in the workspace as thumbnails for future reference and handy access; or, they can be exported to other software for refinement as rendered images or production drawings.

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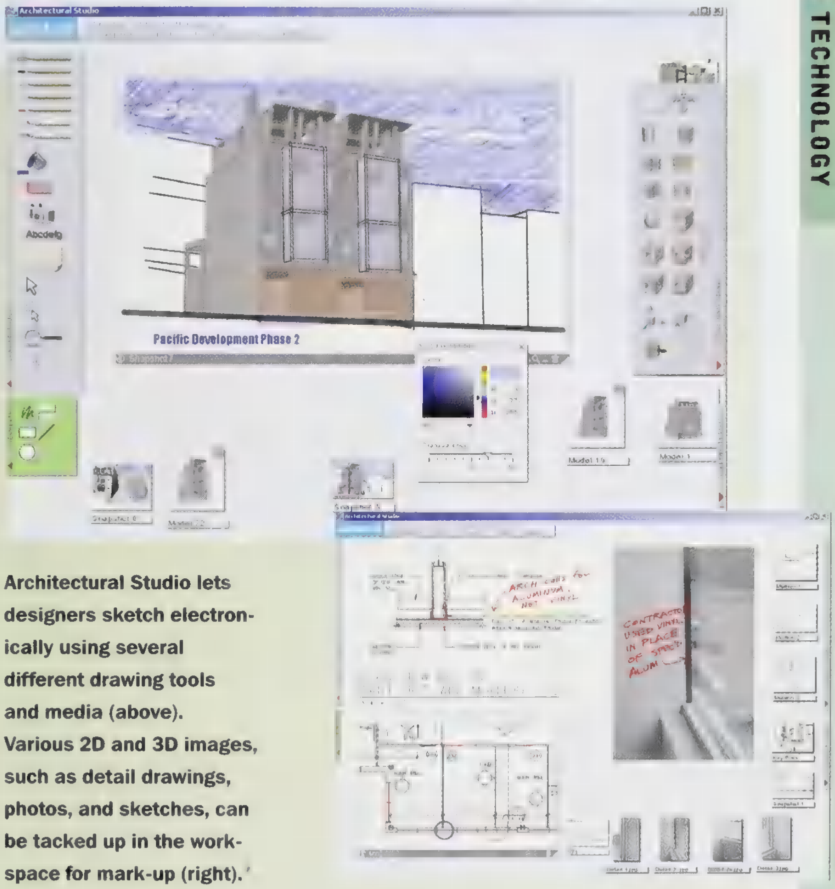
Drafting work and models from other design software, such as Autodesk Architectural Desktop, can be brought into ArchStudio for editing or as backgrounds for additional sketches and studies. Photographs, scanned images, site plans, and other materials also can be brought into the workspace for reference or as backgrounds, just as designers have always done in noncomputerized architectural studios.

The bottom line

This flexibility and the careful mimicry of physical design media makes ArchStudio easy to learn and easy to use, especially for those with little or no CAD experience. Mario Guttman, AIA, corporate CAD director at Hellmuth, Obata + Kassabaum, says the firm's designers have been using ArchStudio successfully for "quick studies, fast visualization of unusual shapes, and multiple iterations of sketching over ideas in various stages of development."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Model 1
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Architectural Studio lets designers sketch electronically using several different drawing tools and media (above). Various 2D and 3D images, such as detail drawings, photos, and sketches, can be tacked up in the workspace for mark-up (right).

ArchStudio can operate as a stand-alone product, but an optional subscription-based collaboration service lets architects use the program's Workspace Navigator function to share their workspace online with others. At Kohn Pedersen Fox in New York, senior associate principal John Koga, AIA, sees ArchStudio's greatest value in enabling designers to share information, "which supports the firm's ability to practice internationally without setting up a lot of [overseas] offices."

Getting in touch

ArchStudio will run on any CAD-capable Windows PC, but the online collaboration feature works best with a high-speed Internet connection. The on-screen tools demand a pen-tablet input device for optimal performance; workable tablets, such as the Wacom Graphire, can be had for under $100 (the current "hot" setup for ArchStudio is the $1,500 Wacom Cintiq touch-sensitive LCD monitor/tablet).

At a suggested retail price under $1,000, plus $500 per year for the optional online service, ArchStudio represents great value. It enhances the early-stage design process in ways no other software has done until now, and if the reader will forgive the use of an "F" word, it makes CAD fun again. ■

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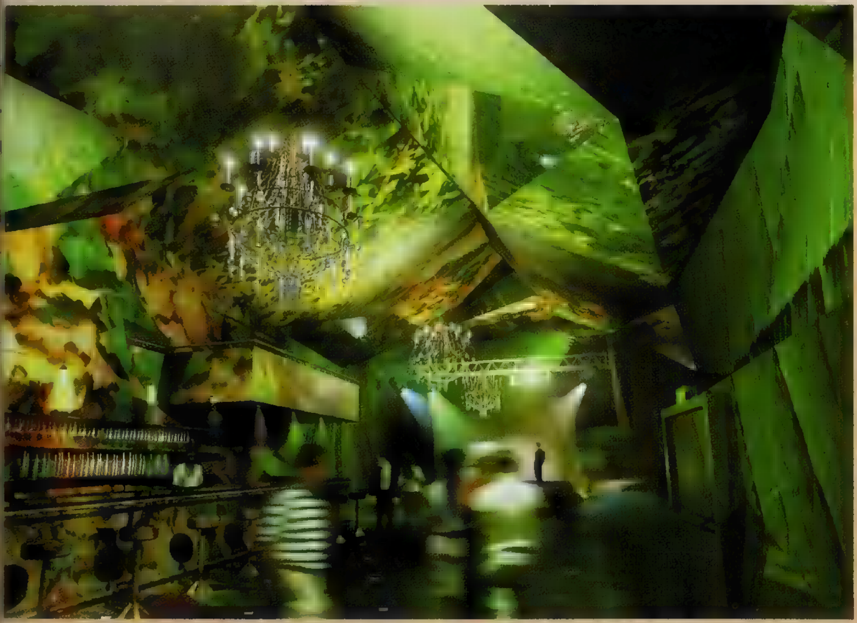
INTERIORS

Of abstraction, faceted surfaces, and skewed perspectives: Welcome inside.



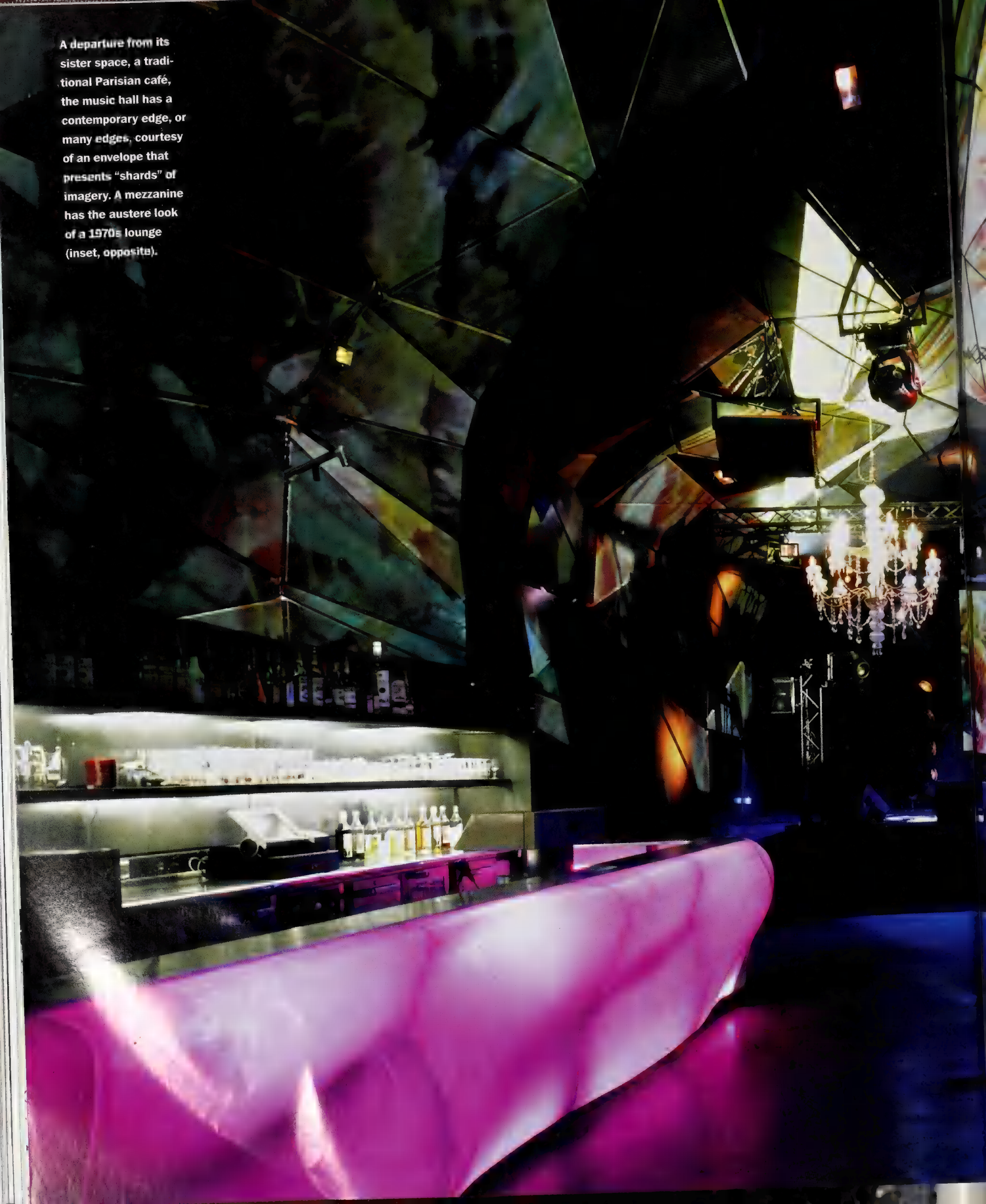
Architecture by nature is a process of enclosure, and examining the articulation of interior spaces is a mainstay of RECORD's coverage. Since 1970, the annual Record Interiors issue has presented projects in the vanguard of interior architecture and design. This month, we launch a new quarterly section that expands our exploration of this landscape. Mapping the territory where the work of architects, interior designers, and consultants frequently converges, we will survey essential elements—from architectural envelopes and space-planning to custom-designed furnishings and finish details.

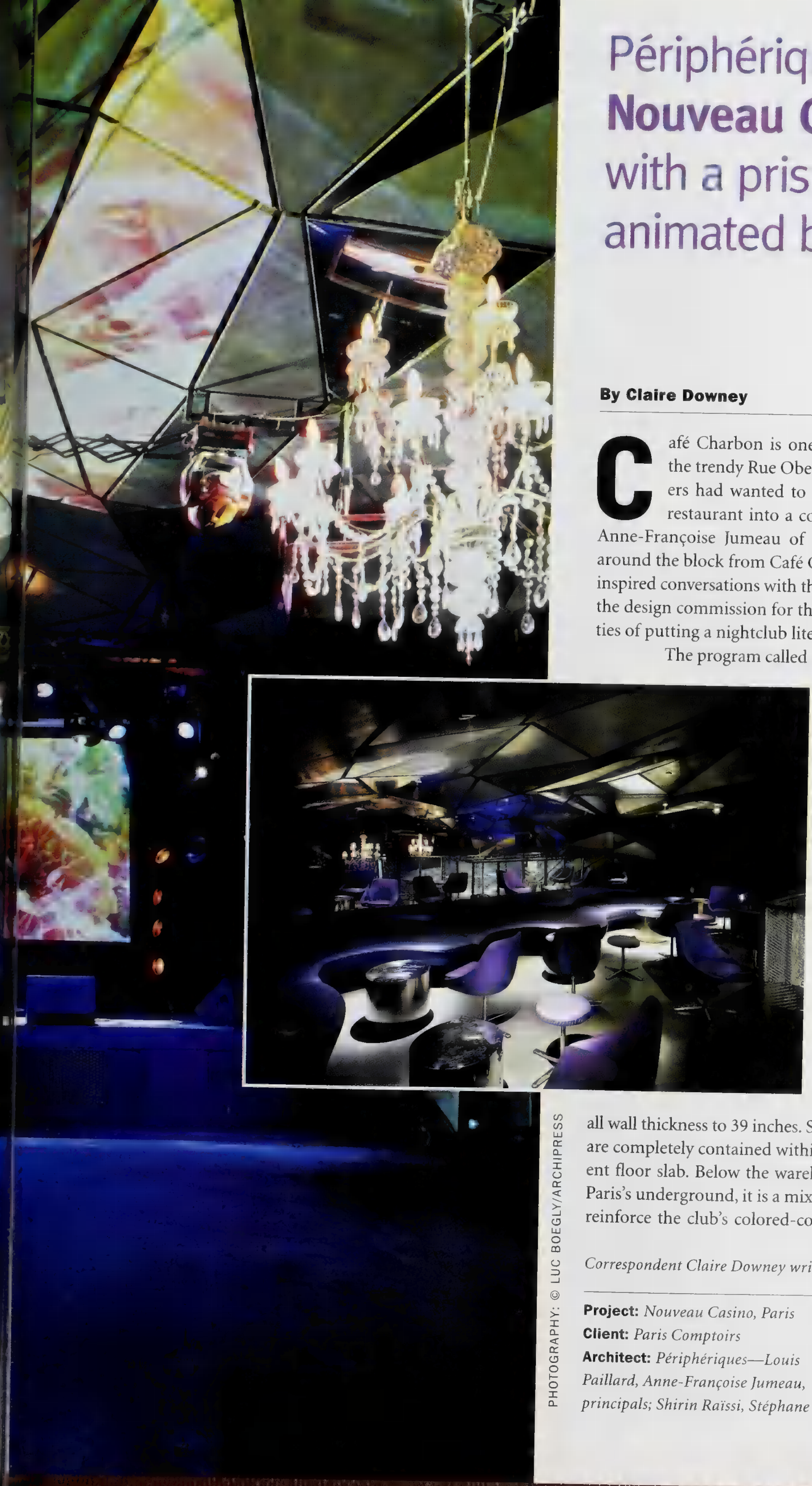
Here we present four diverse hospitality projects: a nightclub, casino, hotel, and restaurant with adjoining bar. Though varied in program and budget, the venues resonate with grace notes echoing the zeitgeist.

At the Nouveau Casino in Paris (digital rendering, left), Périphériques wraps the ceiling and walls of a music club with fractured surfaces composed of opaque triangular panels. Like prisms refracting contemporary culture, the faceted planes come alive when blanketed with projected video images. At the Mohegan Sun casino, Rockwell Group's study of faceted form is a three-story tower clad with backlit alabaster panels. Veiling a bar with a ghostly glow, the structure seems like a photographic negative of the Nouveau, twisted and turned on end. Throughout the Connecticut casino, abstract forms express symbols of Native American culture. Meanwhile, at a historic San Francisco hotel, Philippe Starck juxtaposes signposts of Surrealism (a Dali-designed table, Magritte-inspired chair) with monumental scale. To recast the bar of a Victorian-vintage hotel in London, Adam Tihany alters perspective with canted perimeter walls edged with light. Designed to entice, these multilayered interiors all explore the boundaries of what Frank Lloyd Wright called "the architecture of the within." *William Weathersby, Jr.*

[illegible] **Nouveau Casino, Paris**
Périphériques
[illegible] **Mohegan Sun, Uncasville, Conn.**
Rockwell Group; Kohn Pedersen Fox Associates
[illegible] **Foliage and Mandarin Bar, London**
Adam D. Tihany International
[illegible] **Clift, San Francisco**
Philippe Starck
[illegible] **Interior Products**

A departure from its sister space, a traditional Parisian café, the music hall has a contemporary edge, or many edges, courtesy of an envelope that presents "shards" of imagery. A mezzanine has the austere look of a 1970s lounge (inset, opposite).





PHOTOGRAPHY: © LUC BOEGLY/ARCHIPRESS

Périphériques wraps the **Nouveau Casino** in Paris with a prismatic ceiling animated by video imagery

By Claire Downey

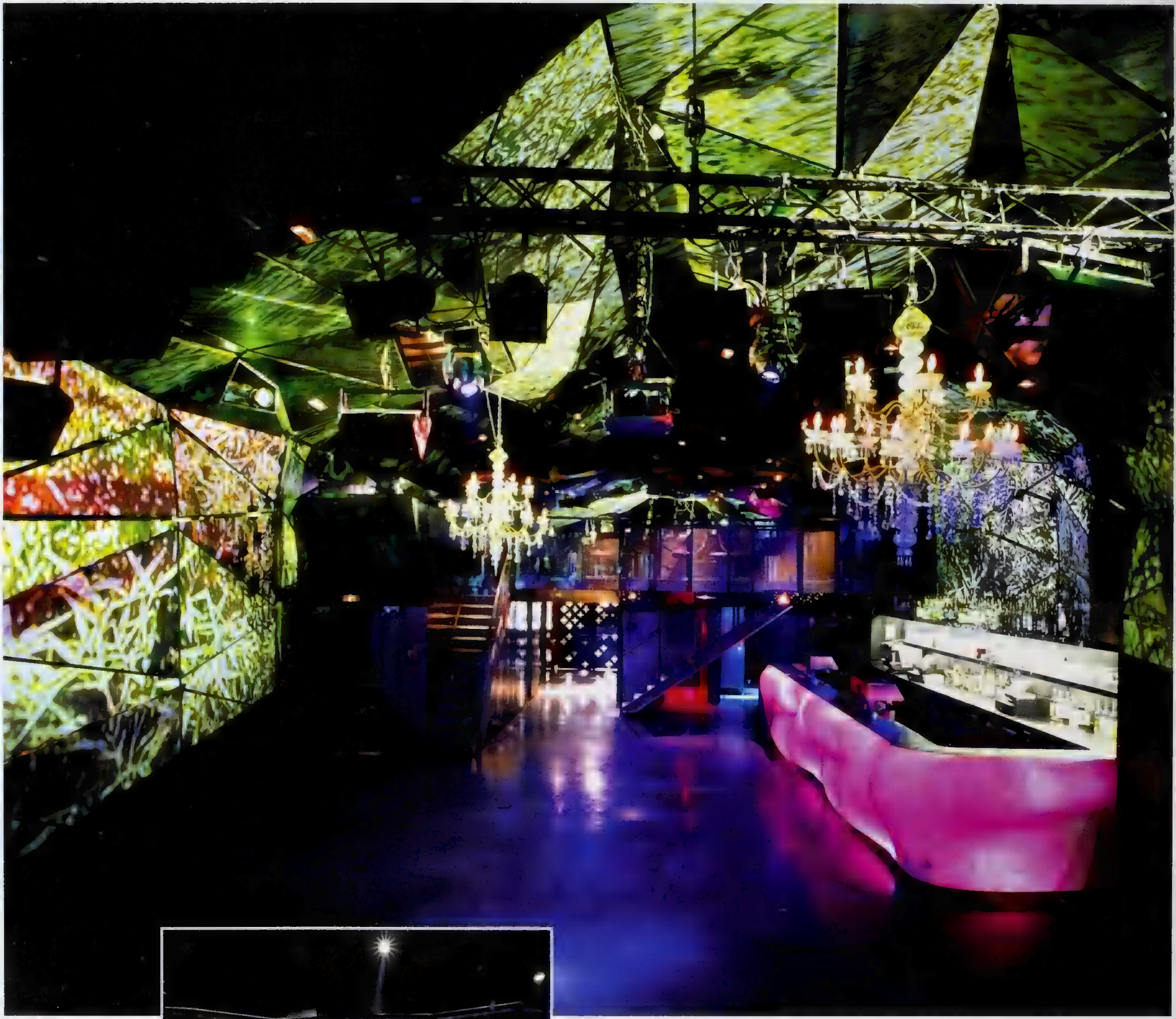
Café Charbon is one of the oldest and most popular cafés on the trendy Rue Oberkampf in western Paris. For years the owners had wanted to convert an abandoned factory behind the restaurant into a concert venue. Architects Louis Paillard and Anne-Françoise Jumeau of the firm Périphériques have their offices around the block from Café Charbon and are regular clients. After a few inspired conversations with the owners, Paillard and Jumeau were offered the design commission for the Nouveau Casino, and with it the difficulties of putting a nightclub literally under their neighbors' windows.

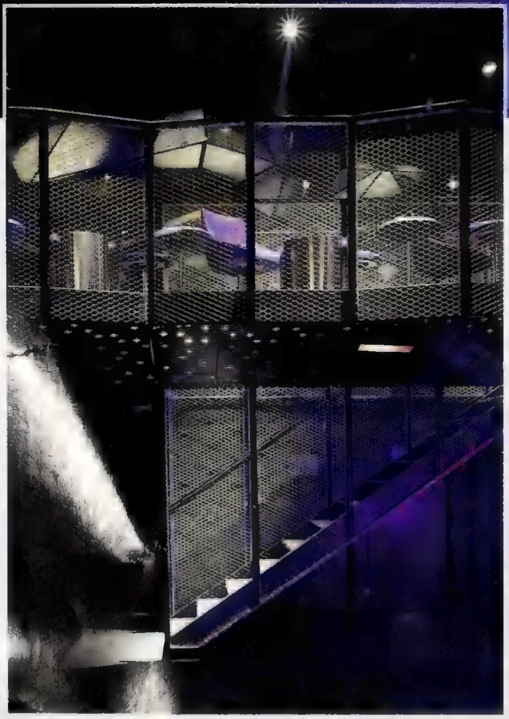
The program called for a 300-person-capacity concert hall, with direct access from both the street and the café; a bar; DJ booth; stage; dressing rooms; a ground-floor kitchen to be shared by the café and the concert hall; and a food and beverage prep area, storage, and cold rooms on the basement level. The 6,620-square-foot project was budgeted at $1.3 million (or $196 per square foot).

With apartments overlooking the site, the main challenge was to maximize the interior ceiling height and create a soundproof envelope, all without raising the roofline. The acoustical problem was solved by building an independent box within the existing shell, then separating the two with a continuous 9.45-inch air space. Each structure is insulated, bringing the overall wall thickness to 39 inches. Structural support and mechanical systems are completely contained within the inner box and rest on an independent floor slab. Below the warehouse, the soil is unstable; as in much of Paris's underground, it is a mix of ancient foundations and loose dirt. To reinforce the club's colored-concrete floor, where hundreds of patrons

Correspondent Claire Downey writes about architecture and the arts from Paris.

Project: *Nouveau Casino, Paris*
Client: *Paris Comptoirs*
Architect: *Périphériques—Louis Paillard, Anne-Françoise Jumeau, principals; Shirin Raïssi, Stéphane Razafindralambo, Philoméne Rowe, Rémi Schnebelin, project team*
Consultants: *Peutz & Associates (acoustics); SIE (electrical); Ravelli (ventilation); Faust; FVS; Di Profa*





The bar (above) is fabricated of molded, translucent resin, which is internally lit by color-gelled fluorescents. Ornate chandeliers add a touch of familiarity. The mezzanine (left).

would be standing at a time, thin piles were sunk from 27 to 45 feet into the ground. Springs between the piles and the slab absorb vibrations from the musical performances.

What makes the club interior so striking is the enclosing shell, faceted by hundreds of black triangles. The triangular steel sections are supported on a metal frame, whose horizontal members zigzag up and down, in and out. Each section was designed on the computer to assure that every triangular piece lies flat to create a beveled surface. The effect is that of a cave cut from precious mineral formations. Jumeau calls it "a coal mine," inspired by the piles of coal, or *charbon*, left at the site from the days when many Paris cafés sold coal for heating.

The club's changing ambience comes from video images projected onto the shell to create what the architects call "moving wallpaper."

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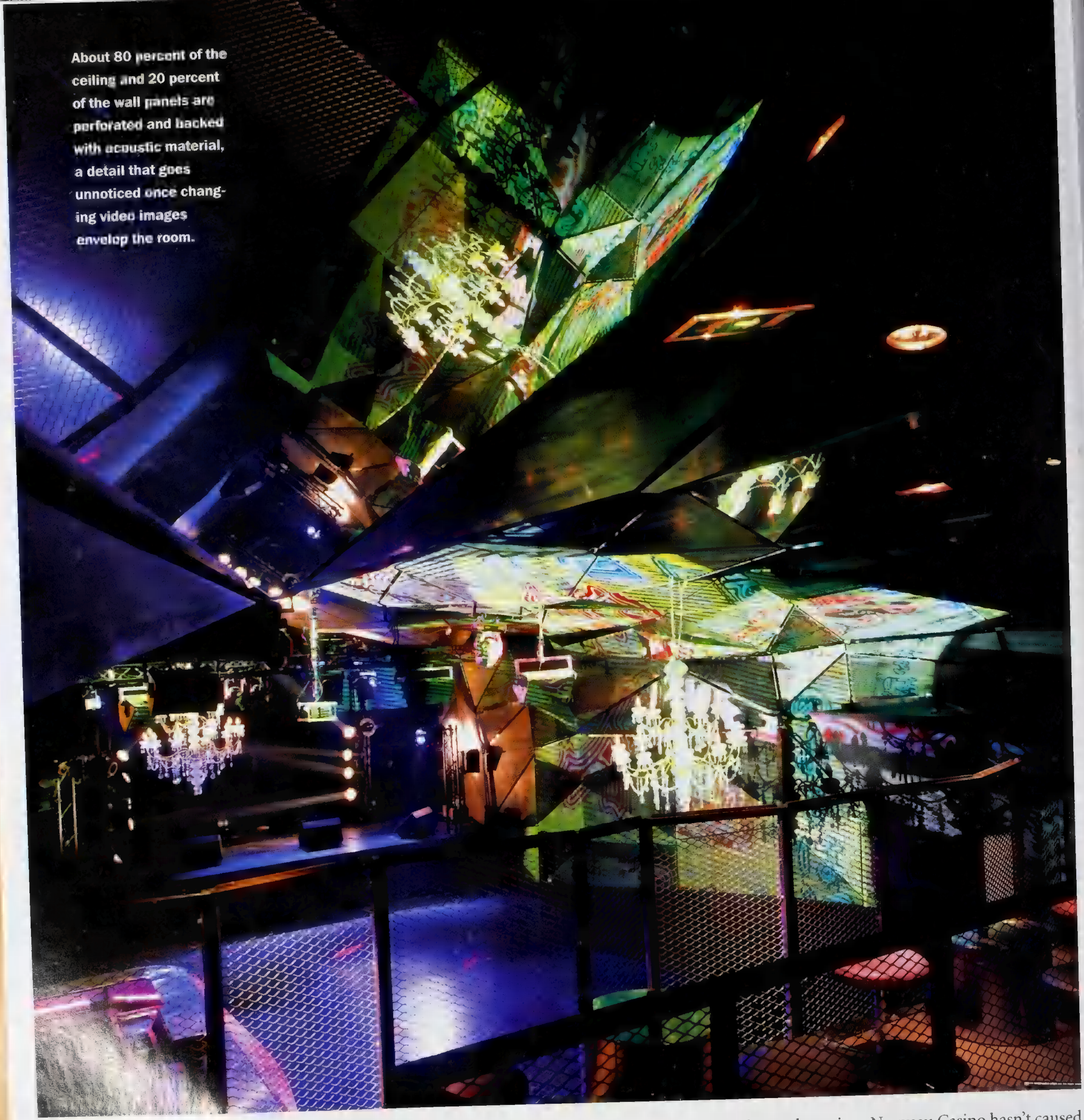

About 80 percent of the ceiling and 20 percent of the wall panels are perforated and backed with acoustic material, a detail that goes unnoticed once changing video images envelop the room.

The black metal surfaces have a simple waxed finish, which is surprisingly reflective. Random triangles are mirrored to intensify the video effects. Ventilation gaps between triangles draw smoke out of the room, and fresh air is pumped through the side walls. Six video projectors, lighting, and other technical systems are attached to and sometimes hidden by the metal-clad shell. With ceiling height at a premium, air-conditioning units were squeezed into pockets above the irregular form.

On the mezzanine, Paillard wanted to create an "artificial landscape," with the [illegible] of a banquette representing the grade lines on a map and tables [illegible] centers. "As a private joke," he says, the banquette, seen in section, is the same as the front seat of a Citroën DS car.

The success of the rambunctious Nouveau Casino hasn't caused any neighborhood feuds. The insularity of the club has brought praise not only from neighbors but acousticians as well. Hiring architects that work and live nearby seems to have been a very smart move. ■

Sources

Upholstery: *Boyriven and Roby*

Banquettes: *Ets Lecorney*

Lighting: *I Guzzini*

Video projectors: *Fujitsu*

Acoustic wall panels: *Placoplâtre*

Custom metalwork: *Pyrrhus*

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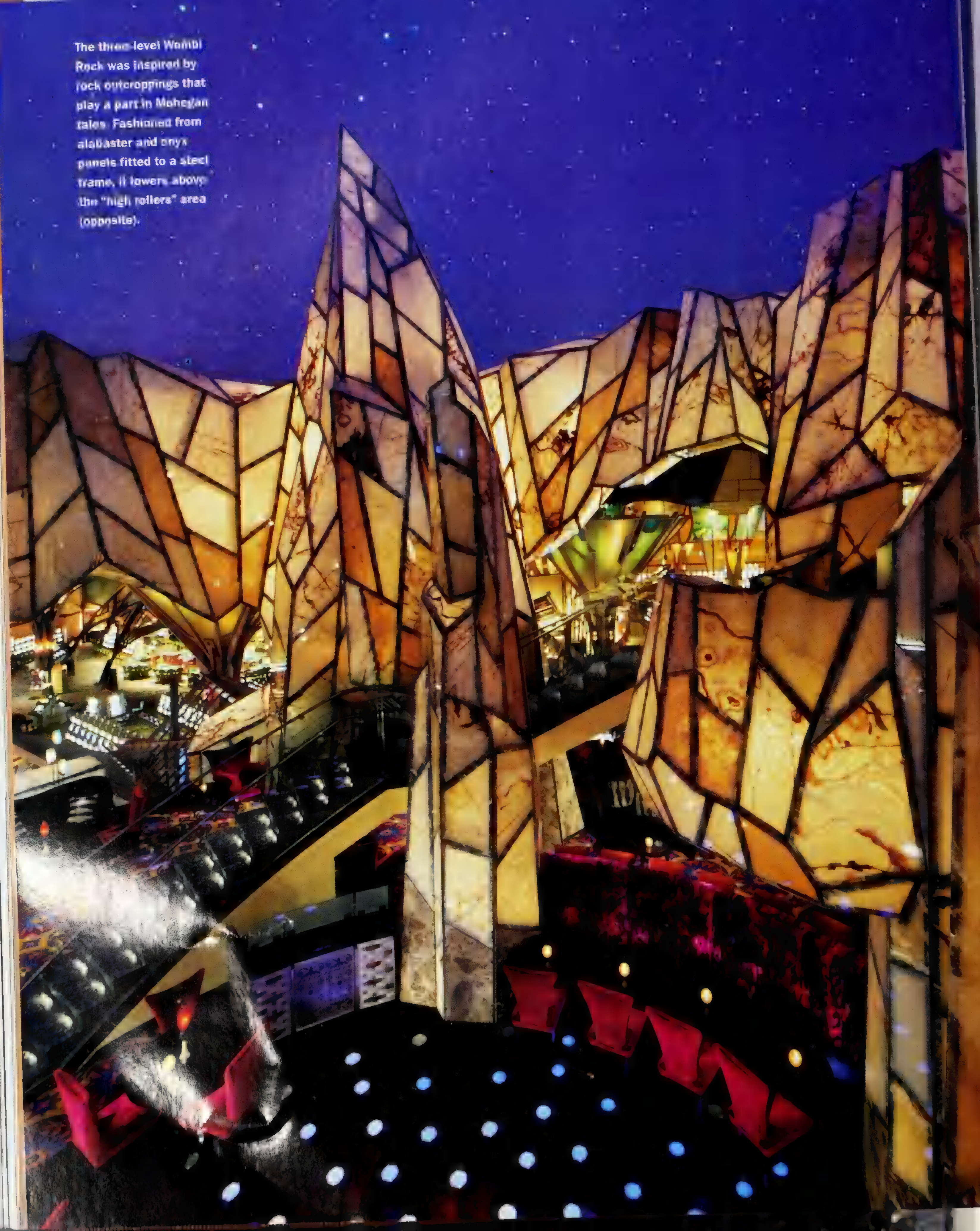
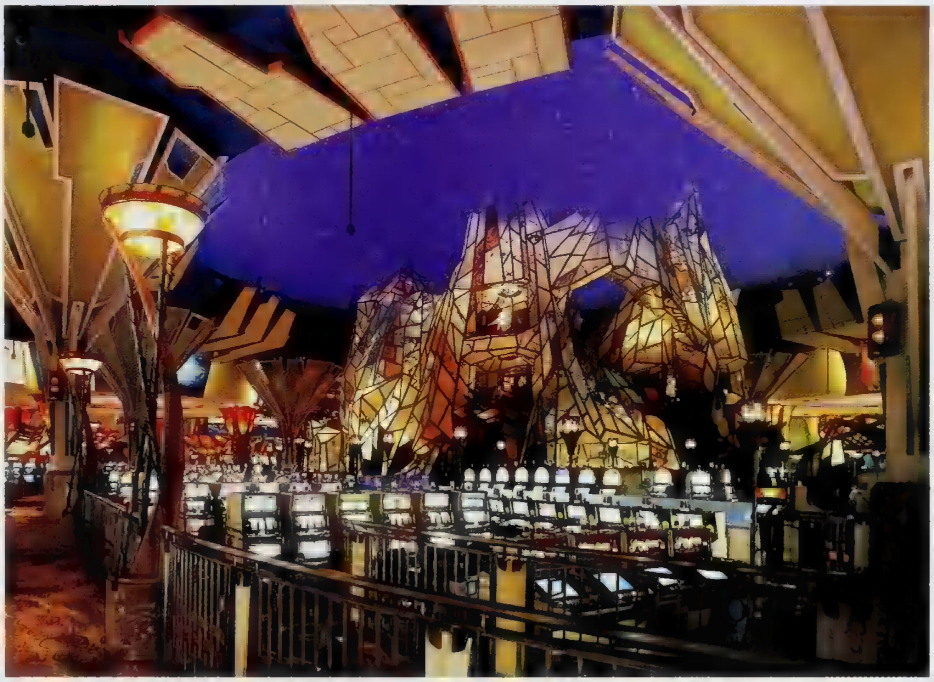


The three-level Wombi Rock was inspired by rock outcroppings that play a part in Mohegan tales. Fashioned from alabaster and onyx panels fitted to a steel frame, it towers above the "high rollers" area (opposite).

Rockwell Group guides Native American narratives into abstract territory at the **Mohegan Sun** casino

By William Weathersby, Jr.



PHOTOGRAPHY: © FREDERICK CHARLES

It's a $1 billion bet. Building upon the success of the six-year-old Mohegan Sun casino, development partners Sol Kerzner and the Mohegan Tribe are wagering that amount with new attractions aimed to keep gamblers streaming to the 240-acre site in southeast Connecticut. Adding more than 4 million square feet to the existing 630,000-square-foot complex, the expansion recasts the casino as a full-scale destination resort along the Thames River. Unveiled last September, new features include 115,000 square feet of additional gaming space, nine new restaurants, a 10,000-seat arena, 300-seat cabaret, and two-story shopping promenade. Next month, a 34-story, 1,200-guest-room hotel and adjacent 100,000-square-foot convention center will debut to round out the resort.

Designed by architects Kohn Pedersen Fox Associates (KPF) with interior architecture and design by Rockwell Group, the property's new showplace is the Casino of the Sky, which expresses the symbolism and narrative history of the Mohegans' Native American culture through abstract architectural form and a collage of tactile materials. Breaking with many conventions of typical casino design, the architects have animated the interior landscape with high ceilings, ample skylights, and varied sight lines. A straightforward circular plan and wayfinding cues woven throughout the interior elements help patrons navigate around the gaming floor and other areas, while a planetarium-dome ceiling captivates the eye when players take a break from the slot machines.

Although the Mohegan Sun was conceived as an expansive resort, plans were scaled back to initially build only the first phase, the Casino of the Earth, which opened in the fall of 1996 [RECORD, March 1997, page 104]. Kerzner, the resort magnate whose Sun International has developed properties including the Lost City in South Africa and Atlantis in the Bahamas, had teamed with the descendants of the Mohegans, a largely defunct tribe of Native Americans who once thrived in the woodlands of Connecticut, to build the casino on reservation property.

In the late 1990s, KPF won a limited competition to refocus and manage the massive expansion. Rockwell Group, which designed the interiors of the original casino, returned as principal interior architect and designer, with Hirsch Bedner Associates designing hotel guest rooms and conference spaces. To complete the low-rise podium (casino, arena, and back-of-house facilities) within 35 months, KPF managed 39 architectural/engineering firms, who were divided into teams to tackle major zones of the complex as self-contained building projects. The existing casino remained open throughout construction.

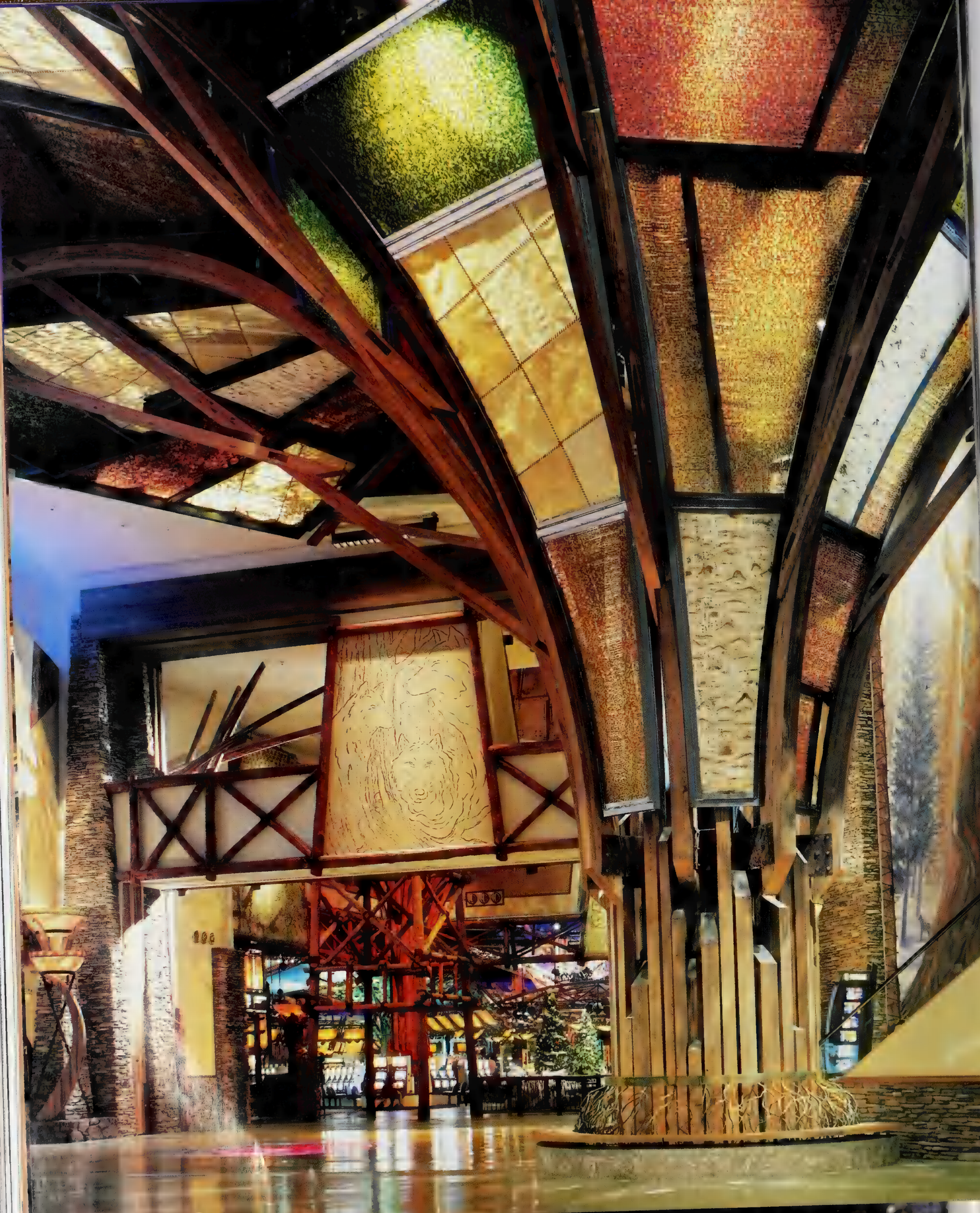
For the new gaming facilities, Rockwell Group's challenge was to create spaces that would relate to the existing casino without overshadowing it. "The client wanted to maintain a subtle sense of continuity within the entire complex, without duplicating design details," says Rockwell Group design principal David Mexico. "Our strategy was to carry through narrative themes and materials inspired by Mohegan motifs, but to express them in a more abstract architectural vocabulary."

The new casino is linked to the original venue by a retail arcade, which features elements of a "life trail," a linear abstraction depicting the Mohegan migration southward to the region centuries ago. A "Tree of Life," a waterfall, and sculptural representations of milestones along the journey delineate the path. The route ends at the 150-foot-diameter planetarium dome, which covers the Casino of the Sky. Special-effects lighting projects constellations, sun cycles, and clouds across the ceiling.

Departing from the existing casino's rustic details (lashed-log trellises, faux-hide canopies, stone partitions), the Casino of the Sky is a

RECORD contributing editor William Weathersby, Jr., is based in Westport, Conn. He frequently writes about architectural interiors and lighting design.

Project: *Mohegan Sun, Casino of the Sky, Uncasville, Conn.*
Architect: *Kohn Pedersen Fox Associates—A. Eugene Kohn, Paul Katz, James von Klemperer, principals; Lloyd Sigal, Joshua Chaiken, Russell Patterson, senior associate principals*
Interior architect: *Rockwell Group—David Rockwell, principal; David Mexico, design principal; Ed Bakos, managing principal; Robert Ashton, senior project manager; Lorraine Knapp, senior interior designer; Julie Yrasek, interior designer*
Consultants: *DeSimone Consulting Engineers; Flack & Kurtz Consulting Engineers; Thompson Engineering; Giovanetti-Shulman Associates; Fisher Marantz Stone (lighting)*



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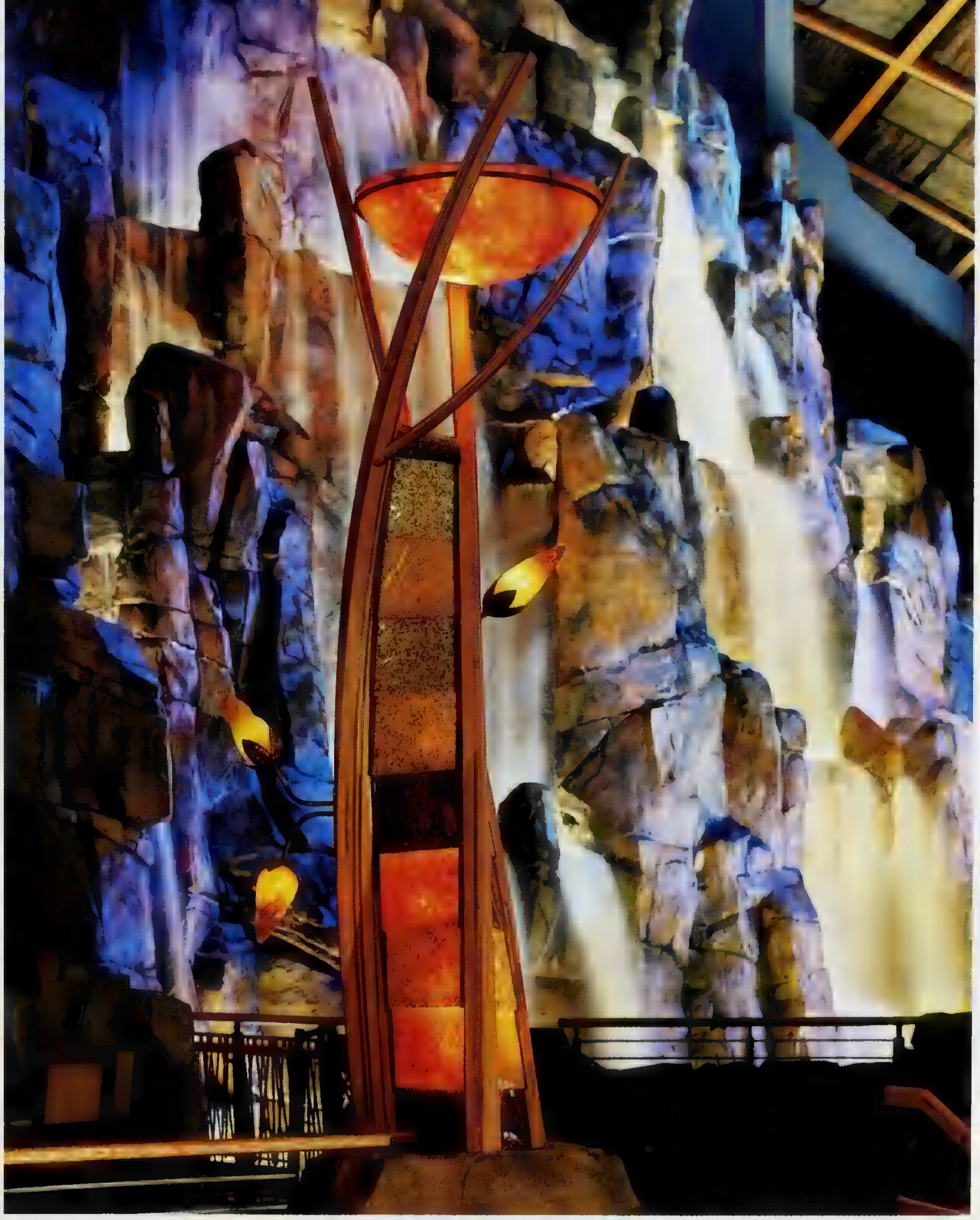
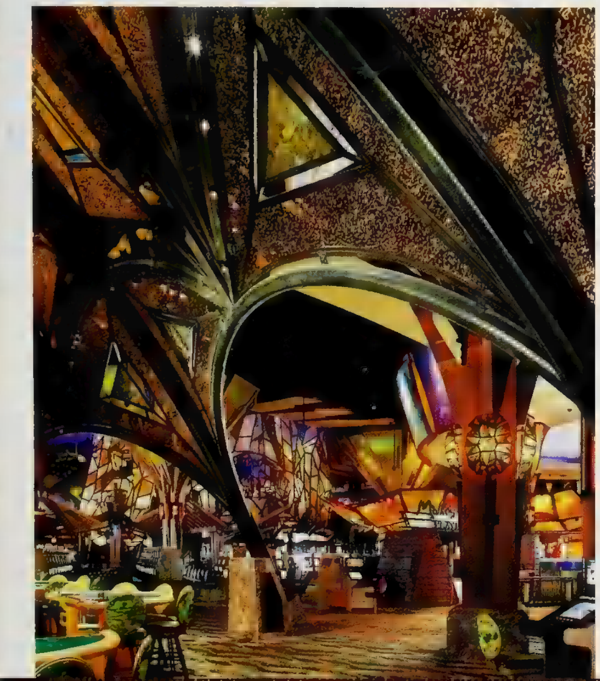
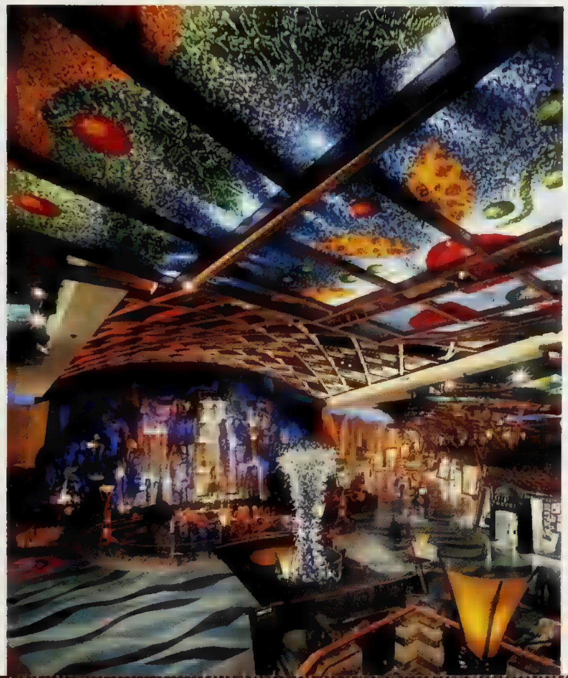
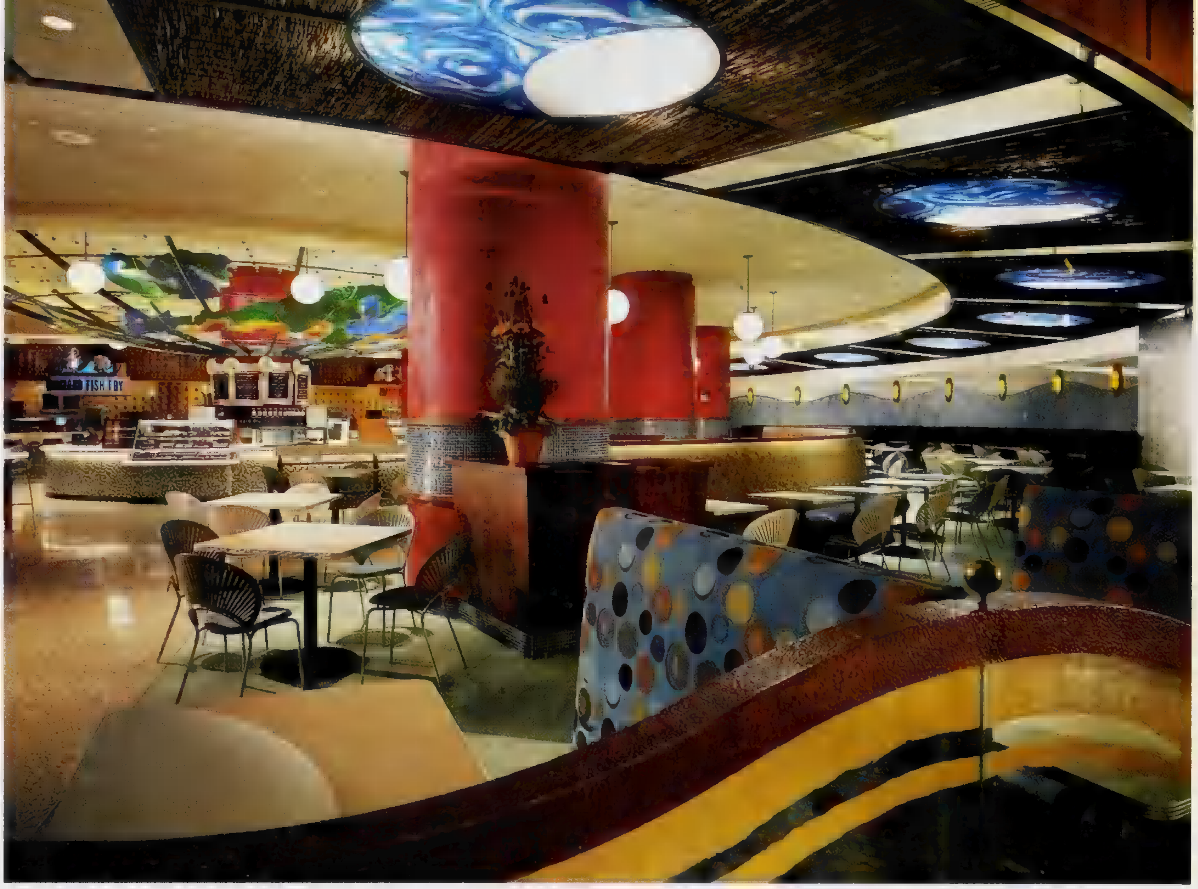


The Tree of Life (opposite) is detailed with copper, birch, and beads. A waterfall cascades down simulated stone behind a bar in the retail promenade (right). The smoke-free gaming area sits under a steel canopy detailed as an abstracted tortoise shell (below left). Glass-bead panels catch the light overhead near a glass sculpture by Dale Chihuly (below right).







A restaurant features moon-inspired imagery (left). The kaleidoscope of details includes (below, clockwise from top left): glass beads strung into panels; flowers preserved in acrylic to enhance a restaurant wall; the metalwork rope detail of a torchère; broken-tile mosaics; a gilt-branch cuff for a column; the curlicues of a Chihuly sculpture.

kaleidoscope of jewel-toned finishes. Every surface seems touched by the handwork of artisans: Glazed tiles, cast-metal balustrades, terrazzo floors inlaid with mother-of-pearl, tie-dyed velvet upholstery, and Murano-glass globes are among the wealth of materials. More than 30 million glass beads are strung into panels to catch the layered light. It's a riotous mix, but the dense patterning stands up to the scale of the 90-foot-high space.

A focal point of the casino landscape is Wombi Rock, a 60-foot tower clad with more than 12,000 plates of alabaster and onyx, like a massive geode outcropping. The backlit structure houses a three-level bar, lounge, and dance floor, and anchors one end of the gaming floor.

In the hotel lobby, guests will arrive amid a grove of stylized trees, constructed of cedar and copper and topped by beaded plumes. A reflecting pool is lined with mosaics representing Mohegan culture past, present, and future. Though many guests may not infer its many layers of symbolism, the Mohegan Sun expansion shines with a rich interior life. ■

Sources

Cabinetry, millwork: *Roger B. Phillips; Raymond; Swiss Services*

Metalwork: *Eurocraft Architectural Metal; Show Motion*

Paints, stains: *Sherwin Williams*

Wall coverings: *Elizabeth Dow; Bamboo Rattan Works; JM Lynne; Gilford*

Laminates: *Wilsonart; Pionite; Interlam; Chemetal; Formica; Nevamar; Abet Laminati; Laminart*

Carpet: *Couristan; Stark; Eurotex*

Resilient flooring: *Forbo Industries*

Tile: *Hunnell Street Tileworks; David Gordon Ceramics; Country Floors; Tiles/A Refined Selection; DAL Tile*

Furniture: *Lambert Furniture; Goodman Charlton; Roger B. Phillips; Westin-Nielsen; L&B Empire; Majestic Industries; AC Coin*

Lighting: *Unilight; Alger; Lumid; International Ironworks; Savoy Studio; Edison Price; ETC; Starfire; Fiberstars; Elliptipar; Lutron*

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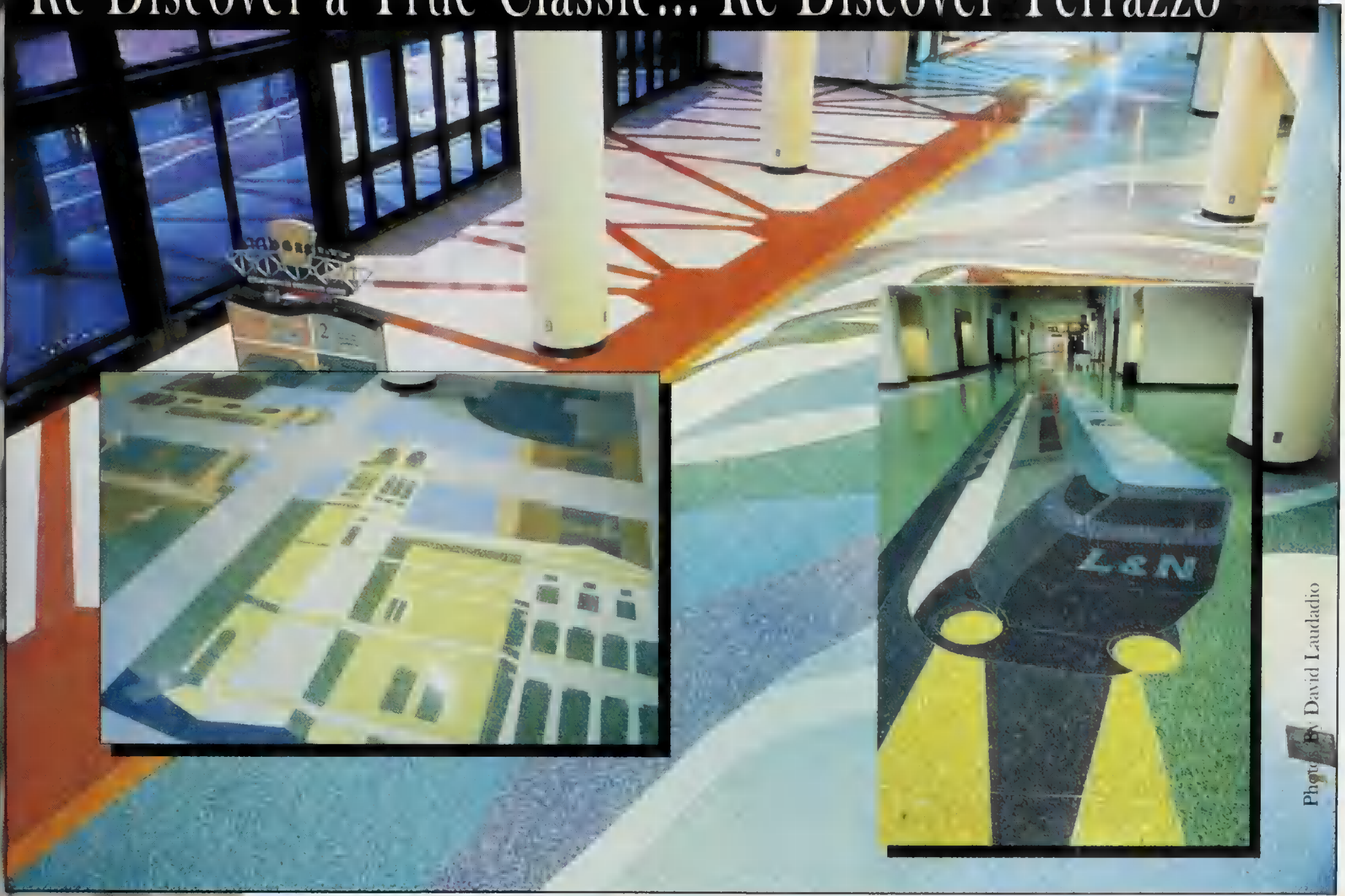

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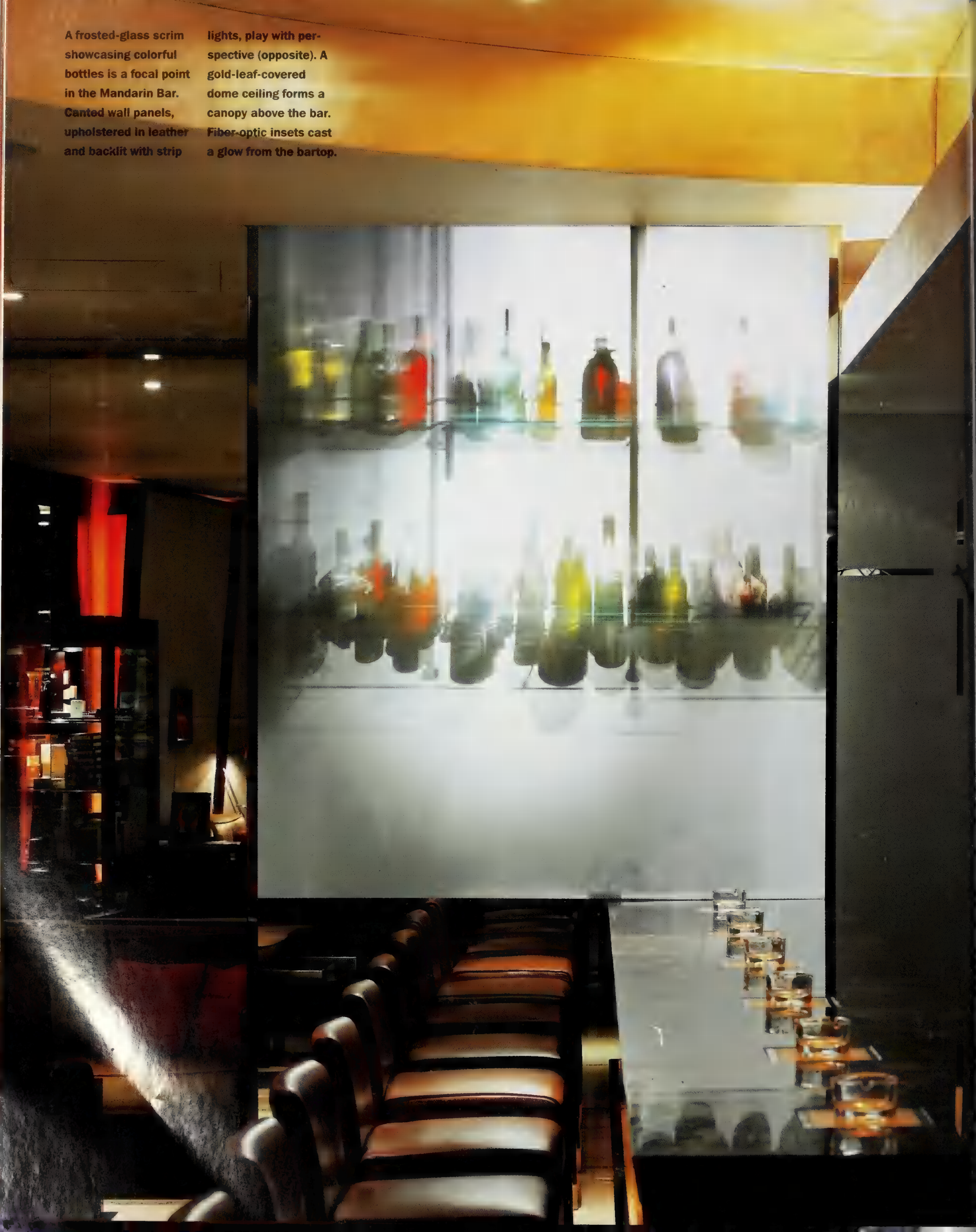
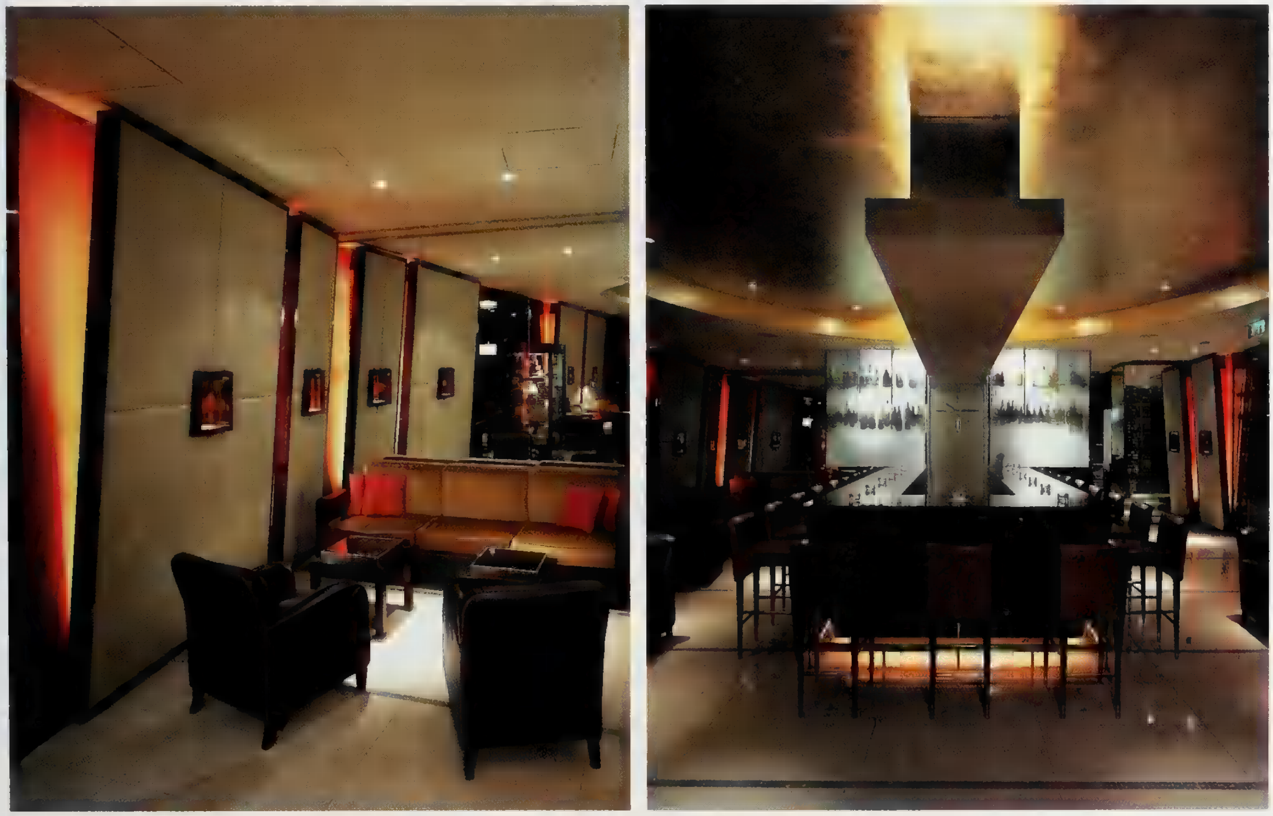


A frosted-glass scrim showcasing colorful bottles is a focal point in the Mandarin Bar. Canted wall panels, upholstered in leather and backlit with strip lights, play with perspective (opposite). A gold-leaf-covered dome ceiling forms a canopy above the bar. Fiber-optic insets cast a glow from the bartop.

Cloaked by a London hotel's Victorian facade, Adam Tihany's **Foliage** and the **Mandarin Bar** are tailored with modern angles and dashing custom details



By John Peter Radulski

Designed by architects Archer and Green as a gentlemen's residential club in 1889 and later converted to a hotel, the Hyde Park remains a stately presence in the heart of London's Knightsbridge district. The Mandarin Oriental Hotel Group acquired the 200-guest-room property at the turn of the millennium and launched a $70 million refurbishment led by Eric Parry Architects and Richmond International.

The hotel's redesigned restaurants and bar are destinations that now sizzle behind the restored Franco-Flemish facade. Tailoring 5,000 square feet of food and beverage space to the requirements of upscale travelers and the cuisine of star chef David Nicholls, Adam Tihany has designed rooms with the precision and dash of a bespoke suit. A well-dressed, split-level restaurant called Foliage; the more casual café, The Park; and the Mandarin Bar project cosmopolitan flair.

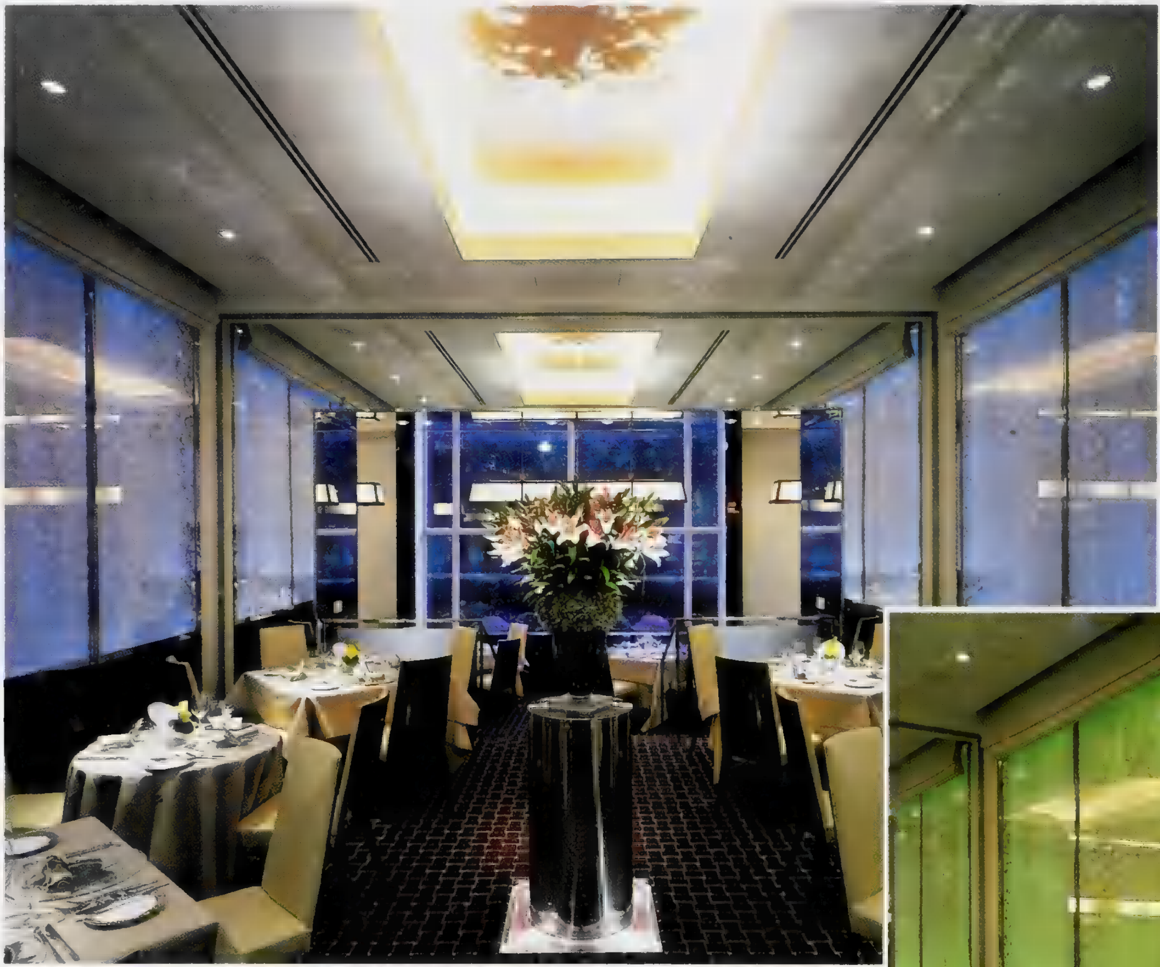
"The most important ingredients in designing a restaurant or bar are understanding the demographics of the clientele and acknowledging the geographical location," Tihany says. "At the Mandarin Oriental Hyde Park, we wanted to bring the park indoors, with spaces that are clean-lined and sexy, sophisticated but not trendy." To support the new public entertaining rooms, outmoded kitchen and storage spaces—which the hotel general manager called "Dickensian"—were brought up to contemporary standards.

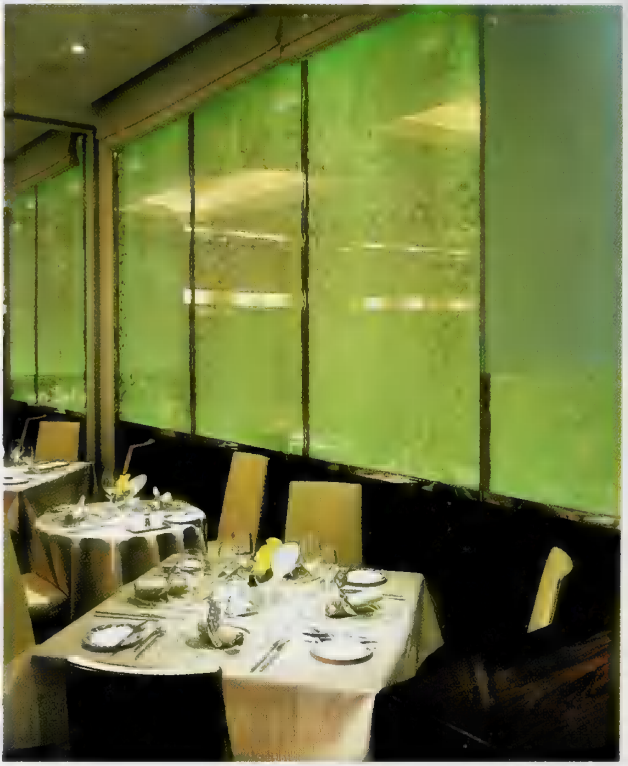
Tihany, perhaps best known as the designer of the New York City restaurants Jean Georges and Le Cirque 2000, describes the previous Hyde Park restaurant and bar decor as "Francophile-Continental," with large rooms featuring cream-colored walls accented by boiserie. To establish a more intimate scale, he reconfigured the two spaces into a new trio—a bar/lounge, café, and main dining room.

Entered from the hotel lobby, the Mandarin Bar encompasses 2,500 square feet, with seating for 160, including a cigar lounge with custom humidor. Pale marble flooring sets the stage for lounge chairs covered in dark leather, mohair-upholstered sofas, and a central bar faced

John Peter Radulski is the former editor of Hospitality Design. *He is a writer and design consultant based in Westport, Conn.*

Project: *Foliage and Mandarin Bar, Mandarin Oriental Hyde Park Hotel, London*
Client: *Mandarin Oriental Hotel Group*
Interior designer: *Adam D. Tihany International—Adam D. Tihany, principal designer*





Fiber-optic fixtures backlight four sizes of silk leaves pressed between glass panels in Foliage, creating a play of light and shadow. The color of light is changed for each season, such as blue for winter (left) and green for spring (below). Tihany also designed the chairs and table accessories.

with Macassar ebony and topped with marble. At the room's perimeter, seven canted wall panels are clad in leather and backlit with low-voltage strip lights. A vitrine inset at the center of each panel showcases martini glasses designed by Tihany.

Tihany turns the task of bartending into a veiled performance. A hostess is stationed within the 3-foot-wide space between the U-shaped bar, which Tihany calls "the runway," while drinks are mixed behind a frosted-glass panel. Illuminated by miniature, ceiling-mounted halogen track fixtures, rows of colorful bottles behind the glass panel appear mosaic-like when viewed by patrons.

The bar opens to a rotunda, which is bracketed by two glass-enclosed rooms showcasing 5,000 backlit bottles of wine. The rotunda serves as a pivot point between The Park and Foliage. The dome ceiling is covered in silver leaf, and the floor is paved with limestone accented by inlays of metal and black marble.

One challenge in the 1,300-square-foot, 65-seat Foliage was to carry through a sense of place into evening dining hours. Although the dining room offers spectacular views of Hyde Park during the day, at night the park's lights are turned off and diners would peer into a darkened void. Tihany's solution was to shade the windows in the evening and rely on a series of light boxes set along the walls to visually "steal the park." The chrome-framed panels sandwich 24,000 white silk leaves between two layers of clear glass, which are mounted in front of a panel of mottled, reflective material. Top-mounted, fiber-optic lighting varies the intensity of light depending on the time of day and season. A color wheel can change the light from green to white to blue, while the remote illuminators facilitate maintenance. Rectangular chandeliers overhead faced in parchment and trimmed in stitched leather create another subtle plane of light. Wainscoting of hand-rubbed mahogany is a backdrop for Tihany-designed chairs upholstered in butterscotch leather. Dark basket-weave-patterned carpets underfoot allow the jewel-boxlike enclosure to captivate the eye, a modern spin on Victorian filigree. Tihany's attention to detail extends to custom-designed, botanical-themed tablecloths, serving pieces, and napkin holders. To complete the mise-en-scène, a leaf plucked from Hyde Park rests beneath every glass presentation plate. ■

Sources

Paneling: *Fidec International*

Chairs, tables, upholstery: *Colber*

Lighting: *Colber; Lucifer Lighting*

Carpet: *Thai Dynasty*

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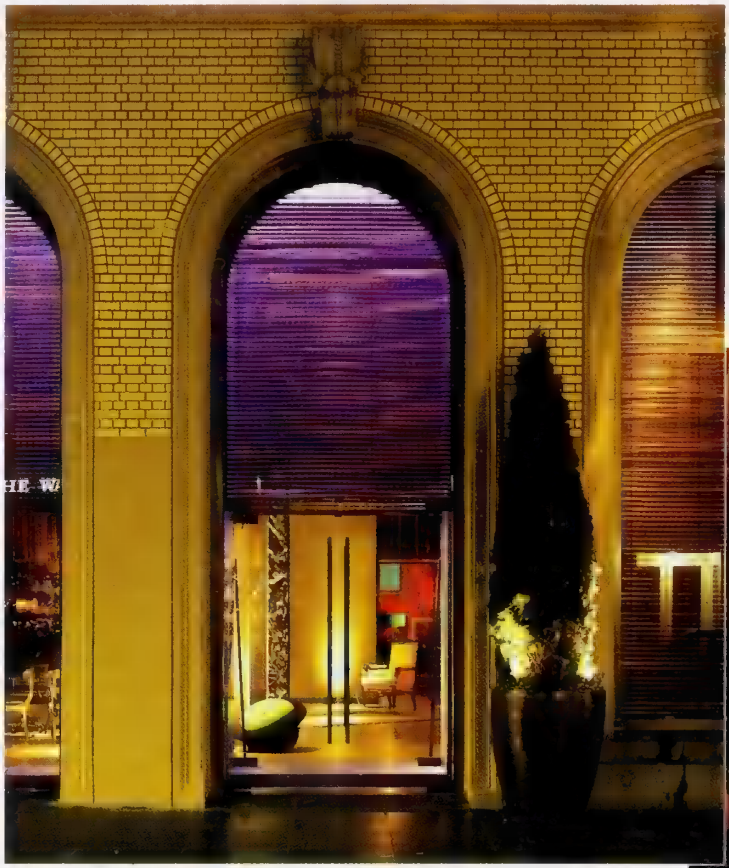
Philippe Starck and Ian Schrager elevate the glamour quotient at the **Clift** hotel in San Francisco



Without signage at the entrance, a pale violet vestibule signals the new Clift (left). The refurbished wood paneling with marquetry in the Redwood Room (below) is a warm backdrop for Art Deco–influenced furnishings.

By Therese Bissell

They got off to a shaky start: the cosmopolitan city that cleaves to its romantic past versus the high-concept, too-cool-for-school brand that is Ian Schrager Hotels. When ISH bought the venerable Clift Hotel in 1999, San Francisco mobilized—focus groups, editorials, vigils, even a Web site warned the ISH triumvirate (Schrager, star designer Philippe Starck, and president of design Anda Andrei) to go easy. The Clift was home to the legendary Redwood Room, for decades the cherished haunt of thirsty sophisticates, rated by even the titanium scooter crowd the sexiest bar in town. ISH got the message. Their $40 million renovation notwithstanding, the Clift aura wasn't to be sacrificed on the altar of hipness.

ISH sparked the boutique hotel trend in 1984 with New York's Morgans. The drill is this: For a fixer building, Schrager devises a theme (cheap, young, luxurious, etc.). The staggeringly fecund Starck (he does everything from faucets to uniforms for the hotels) sketches out details, often from his home in France. "We create together," says Andrei, who, with an executive architect—here, Freebairn-Smith & Crane—prepares drawings from Starck's faxes and makes it all work. "The point is the integrity of the design as opposed to who stamps and signs."

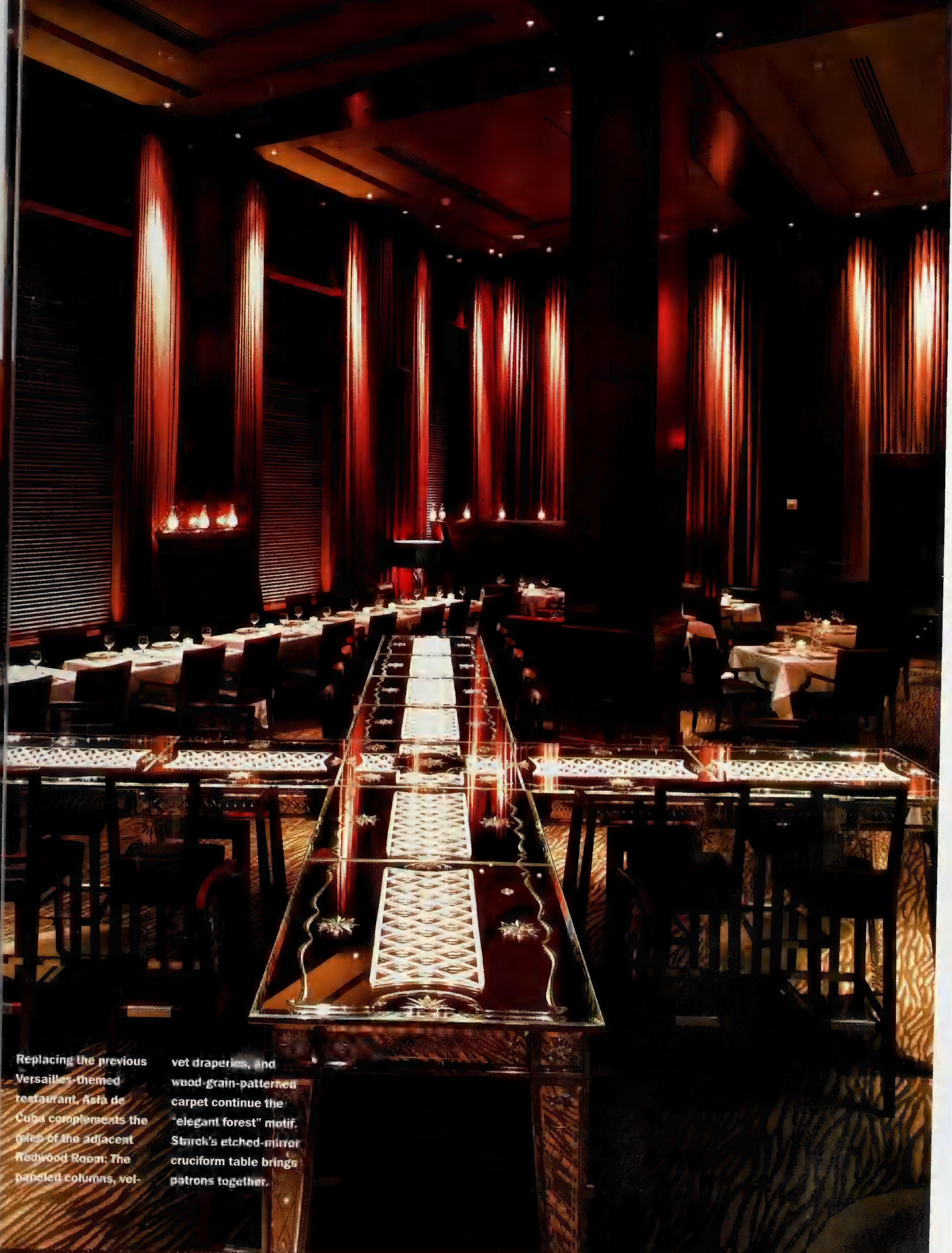
[illegible] that San Francisco is old-fashioned and wood and cigars and elegant, and that it is also cyber kids with no history and no rules," Starck enthuses. His lobby for the historic, George Applegarth–designed, Italian Renaissance–style Clift addresses that duality. Ceilings are again their original 25-foot height; the shell—cool, gray, polished Venetian plaster walls and Pietra Serena limestone floors—is Old World and rich. (Schrager's signature: no exterior sign and the name shortened to "Clift.")

Amid the studiously placed lobby pieces is the requisite ISH big-buzz item, but Starck's bronze Louis Quinze–style Wonderland chair is more gimmicky space-waster than provocateur. The real theater lies in the 18-foot-high, cast-bronze fireplace mantel and Starck's space-manipulating use of contrasting materials in the door frames and reception alcoves.

The fear was for naught: As renovated, the Redwood Room will surely be tryst central for the ages. Designed in 1933 and sheathed from a single, 2,000-year-old redwood tree, it is now largely monochromatic (red-

Therese Bissell, the former architecture editor of Architectural Digest, *writes frequently on architecture and interior design from San Francisco.*

Project: *Clift, San Francisco*
Client: *Ian Schrager Hotels*
Designer: *Philippe Starck, overall design; Bruno Borrione, designer*
In-house architect: *Anda Andrei, president of design, Ian Shrager Hotels; Cono DiZeo, Larry Trexler, Kirstin Bailey, Masako Fukuoka, Dan Stewart, Melissa Sison, Kelly Behun, Lara McKenna, Kim Walker, project design team*
Executive architect: *Freebairn-Smith & Crain/Levikow Associates*
Consultants: *Johnson Schwinghammer (lighting); Gerard Gerouste (art installations)*



Replacing the previous Versailles-themed restaurant, Asia de Cuba complements the mien of the adjacent Redwood Room: The paneled columns, velvet draperies, and wood-grain-patterned carpet continue the "elegant forest" motif. Starck's etched-mirror cruciform table brings patrons together.

The lobby juxtaposes stylized vignettes, with iconic chairs joining art objects (above). Cool palettes and Starck furnishings reign in guest rooms (right).

wood tones in 18 different textures of leather, fabric, carpet, wood, and bronze) with dashes of low-voltage color. The Art Deco marquetry and fixtures—as well as the gilded ceiling—have been gloriously preserved, and the 75-foot-long redwood-burl bar replaced (termites, apparently) with dramatically illuminated glass.

"Public spaces need experimentation, and they need to be strong," says Starck. "Guest rooms are absolutely the opposite." For the 374 rooms (49 are new), the designer used a soft pastel palette and sumptuous fabrics to broadcast tranquillity and luxe. While all the public areas have been reconfigured, the budget dictated that 90 percent of the guest rooms remain intact. The only perceivable flaw: tiny bathrooms in even some of the most expensive rooms, a condition of the building's footprint.

Grace notes include the sleek, all-white business center (velvet curtains, mesh Eames chairs); the rooftop Spanish Suite with wraparound terrace (once the owner's residence, now the locale for parties and chichi meetings); and the burnished, clubby "living room" lounge off the lobby.

"Less and less am I trying to prove something," Starck proclaims. The Clift, too, appears supremely comfortable in its new skin. ■

Off the lobby, a "living room" lounge features curl-up seating and a photographic suite of plastic toy animals by French artist Jean Baptiste Mondino (left).

Sources

Furnishings: *Donghia; Poltrano Frau; Philippe Starck (custom)*

Carpet: *Option Tai Ping*

Wall coverings: *MDC Wallcoverings*

Paints and stains: *Benjamin Moore*

Lighting: *A+L Lighting; Artemus; Lightolier; CSL; Lucifer Lighting; Edison Price; Andromeda; Flos; Kovacs; Philippe Starck (custom)*

Lighting controls: *Lutron*

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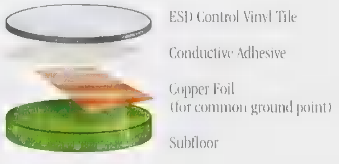

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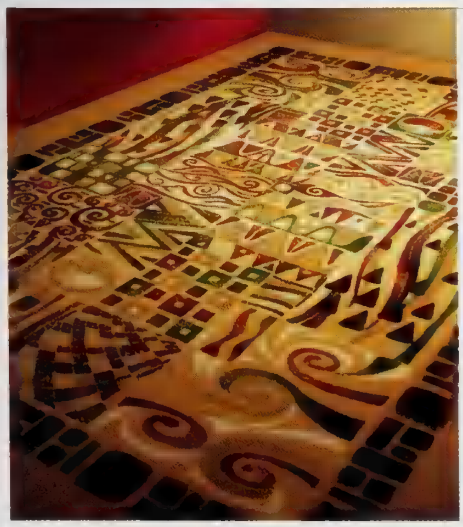
Interiors Products Hospitality

▼ The telltale sofa

The Poe seating collection includes a chair and coordinating ottoman, sofa, bench, and chaise. The collection's name is a discreet reference to the Baltimore Ravens' stadium—the chair was originally conceived for the stadium's luxury suites. All the pieces are armless and are ideal for stylish lobbies, lounges, showrooms, and retail spaces. Wood feet are offered in white oak, maple, or walnut. Poe is upholstered with the new FrankFabrik or COM. 415/487-0110. Ted Boerner, San Francisco. **CIRCLE 200**

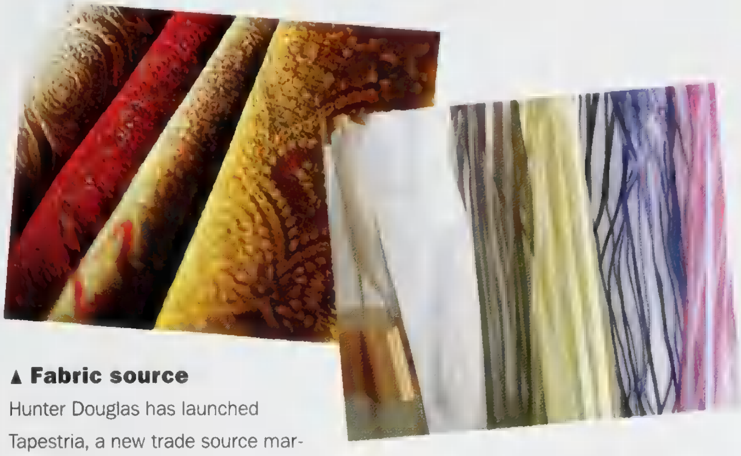
▼ Calligraphic carpet

The new Axminster carpeting woven by Ulster Carpets for the Mandarin Oriental hotel in Miami applies the Uniweave system to portray an entire floorscape without a single design repeat. Conceptualized by HBA/Hirsch Bedner Associates in Atlanta, the designs were inspired by atmospheric Japanese drawings and calligraphy. The ballroom carpeting is designed to tell a unique story, without a single design repeat. 770/514-0707. Ulster Carpet Mills, Marietta, Ga. **CIRCLE 202**



▲ Cost-effective and custom

Milliken Hospitality Carpet has launched the MAX carpet system that eliminates minimum orders, mock-up fees, and upcharges for custom colors. Designs such as Mykonos (shown) use up to 12 colors and are delivered quickly to allow hotels to renovate on smaller budgets and in increments. Mykonos layers swirls, triangles, and ribbons of color on a golden background. A simplified, primitive border encloses the design to create an area-rug look on broadloom. The MAX system includes a variety of carpet bases, such as broadloom and guest room carpets. 800/241-4826, ext. 8716. Milliken Hospitality Carpet, La Grange, Ga. **CIRCLE 204**



▲ Fabric source

Hunter Douglas has launched Tapestria, a new trade source marketplace for interior fabrics, featuring thousands of European designs. As part of the opening, Tapestria announced the Elements collection by Benjamin Noriega-Ortiz, the first in a series of signature collections from leading contemporary designers. Shown above is Beams and Rays from Elements (right), and the ornamental pattern Ciniglia Brandy (left). 201/995-0305. Tapestria, Upper Saddle River, N.J. **CIRCLE 201**

◄ Cause for reflection

Named for a South Sea Island, the Palmyra Mirror was inspired by a late-19th-century French Art Nouveau carved-oak mirror. The entwined flowers and vines that wrap and twist around the frame give the mirror a tropical undertone while retaining a strong European feeling in the quality of the carving and gilded finishes. Available in yellow and white gold-leaf finish, the mirror is 42½" wide by 60" high. 323/658-1085. City Studio, Los Angeles. **CIRCLE 203**

▼ Chaise your mind

New Jersey–based Brander designs fine furniture for commercial, hospitality, retail, and residential spaces. The collection comprises seating, desks, consoles, credenzas, and a range of tables. Wood and metal elements are hand polished; some of the rare woods offered are French walnut, tulipwood, white holly, and Swiss pearwood. The chaise below is made of Maccassar ebony veneer, cast aluminum, and leather. It is 80" wide by 36" high. 908/369-1224. Brander, Hillsborough, N.J. **CIRCLE 205**

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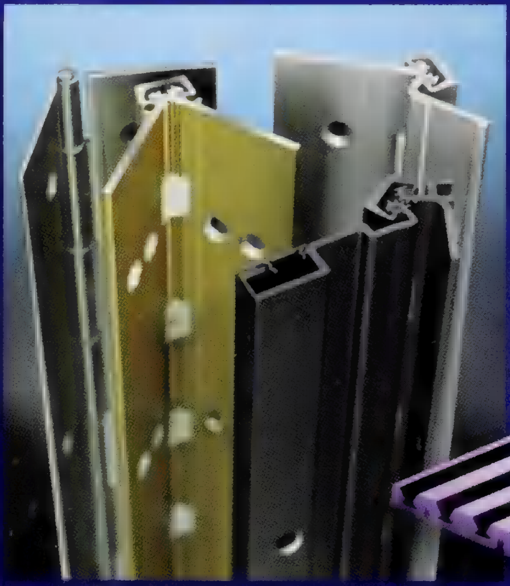

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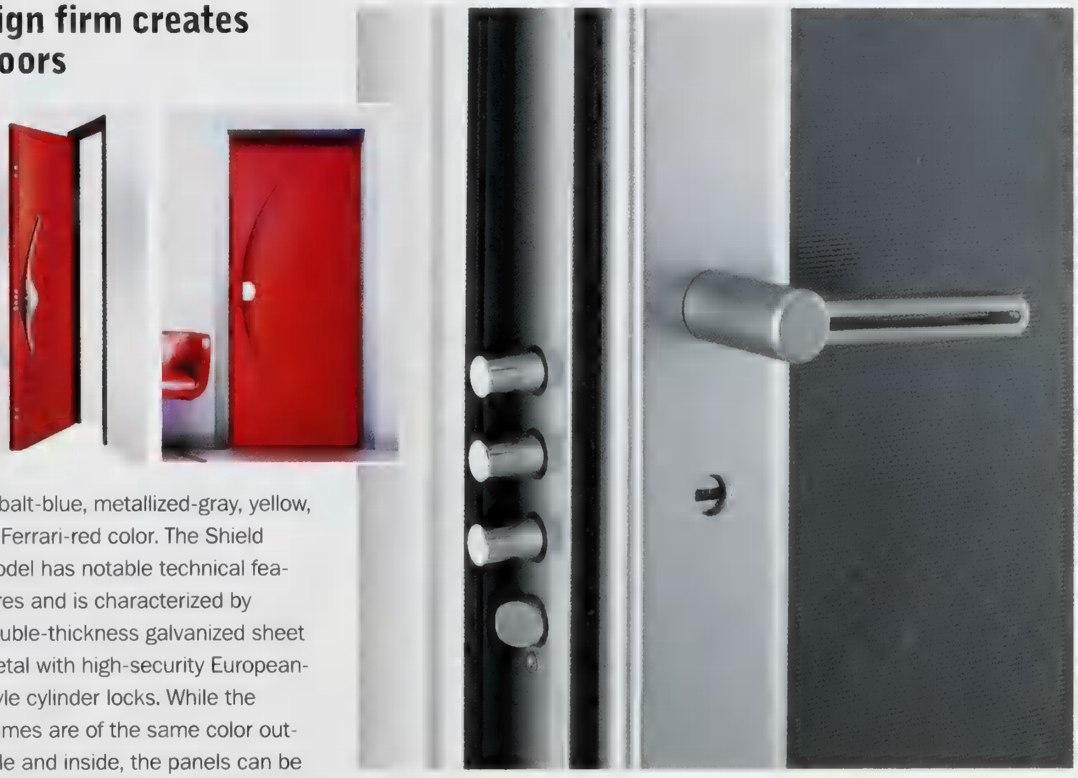
New Products

To learn more about issues concerning fire doors, positive pressure, intumescent materials, or electronic access, architects can study up at **The Door & Hardware Institute's 27th annual convention**, held from July 13–15 at Chicago's Navy Pier. The door offerings below range from commercial security to residential patio styles to rolling counter fire doors. *Rita F. Catinella*

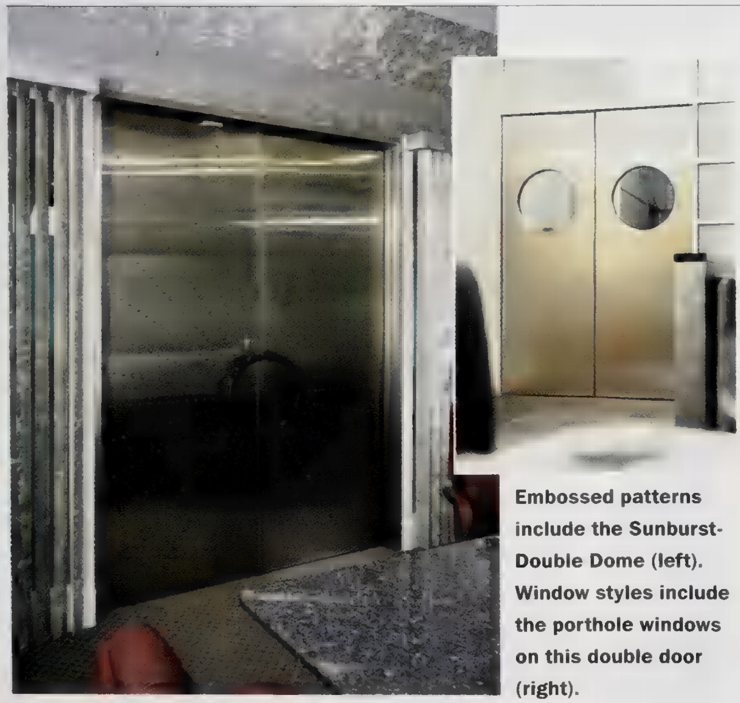
Renowned Italian car design firm creates three new racy security doors

Torterolo & Re, one of the biggest Italian manufacturers of steel-clad doors, has three new security steel-clad doors designed by Pininfarina, a firm that has been active in the style and production of cars for 70 years.

The steel-clad Dream door is equipped with an advanced electronically controlled closing system. Sections and indentations in the panel are reminiscent of the side of a sports car. The colors range from Ferrari red and yellow to metallic glossy Indian blue to metallic light gray. The distinctive features of the Pininfarina design can also be seen in the integrated aluminum handle and the "crankshaft" hinges, which are totally hidden in the frame. The inside of the panel is smooth and the same color as the outside. In the Wave door, the handle attracts attention: a metallic wave in a cobalt-blue, metallized-gray, yellow, or Ferrari-red color. The Shield model has notable technical features and is characterized by double-thickness galvanized sheet metal with high-security European-style cylinder locks. While the frames are of the same color outside and inside, the panels can be different. 39 019 516901. Torterolo & Re, Cosseria, Italy. **CIRCLE 206**



Armor-plated Wave (far left) and Dream (center) doors offer security and race-car appeal. Shield (right) features high-security cylinder locks.



Embossed patterns include the Sunburst-Double Dome (left). Window styles include the porthole windows on this double door (right).

Stainless-steel door and frame options

Since 1993, the Next Door Company has specialized in stainless-steel entrances, storefronts, doors, and frames—the only U.S. manufacturer exclusively dedicated to this craft. Stainless steel naturally resists corrosion and oxidation and does not split or buckle. Next Door offers a variety of designs that include colored steel, embossing, custom etched and textured steel designs, and specialty glass.

Next Door's abraded door patterns, three-dimensional but smooth to the touch, are created through a special crafting technique. Textured and etched steel patterns include small squares, Deco, linen, Indiana leaves, and the customer's own patterns. Next Door's three embossing shapes—Cubic, Orbital, and Dome—are available in a multitude of patterns and colors. Designers glass is available leaded or molded, in colors such as gray, blue, clear, evergreen, and azurlite. The doors are available in five colors of stainless steel and nine finishes. Unique colors and finishes can also be mixed and matched. Finishes include satin, mirror, super mirror, beaded, vibration, bead-blasted (fine), bead-blasted (course), alpenglow, and paint grade primed. Colors include silver, gold, bronze, rose (copper), and black. 800/791-4450. Next Door Company, Weston, Fla. **CIRCLE 207**

New Products

◄ On a mission

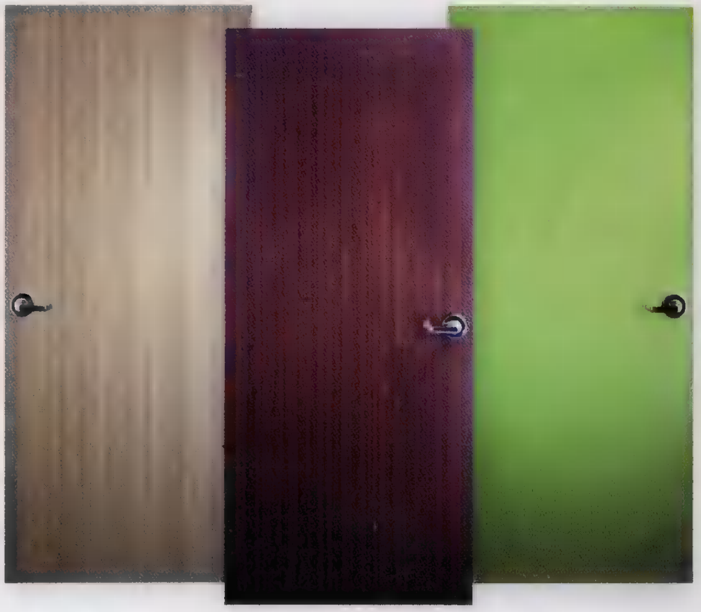
Nord introduces its newest line of interior and exterior doors, the Mission Series. Constructed from fir, hemlock, or knotty-hemlock, Nord Mission doors are available in 10 designs: two constructed with decorative curved arches and eight featuring classic, straight tops for a more contemporary look. Exterior designs are available in 1-, 2-, 3-, and 4-panel, while interior designs include 2-, 3-, and 4-panel with an arch or square top. 800/877-9482, ext. PR-379. Jeld-Wen, Klamath Falls, Ore. **CIRCLE 208**

► Heavy-duty doors

EFCO heavy-duty D318 DuraStile doors provide durability and security for the rigors of schools and other heavy-use environments. These 2"-thick doors utilize ³⁄₁₆" extrusion walls and deep-penetration welded corner-bracket construction. Available with medium or wide stiles, in a variety of finishes, they accommodate up to 1⁵⁄₁₆" glass or panels and any standard locking hardware. 800/221-4169. EFCO Corporation, Monett, Mo. **CIRCLE 209**

► Rolling counter fire doors

Cornell's rolling counter fire doors with integral frame units are factory-welded and fully assembled for a seamless look. The new slip-in style allows the units to slide in and fasten onto existing wall openings. Built-in models are installed as the surrounding walls are constructed. Labeled integral frame units now offer sill options of an integral stainless-steel sill, a UL-labeled plastic alternate sill, or no sill at all. Unit and sills are ½-hour UL labeled and are approved for mounting to rated drywall or masonry. Integral frame units include a curtain of either galvanized or stainless steel that stores in a compact coil at the head of the opening. 800/233-8366. Cornell Iron Works, Mountaintop, Pa. **CIRCLE 211**



▲ Veneer flush doors

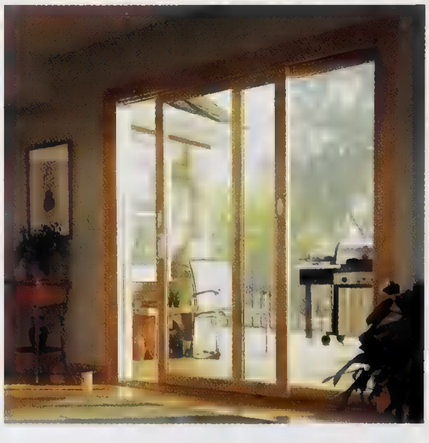
Newly patented, The Maiman Company's Neer Veneer Thermal Fused Flush Door comes in over 100 colors and wood grains at one standard price. The door features a nondelaminating surface that is formed with high-tech resins treated with heat and pressure to resist chemicals and scratches. Like the company's stile and rail doors, the Thermal Fused doors are built with up to 90-minute fire ratings. 417/862-0681. The Maiman Company, Springfield, Mo. **CIRCLE 210**

◄ Electric slide

The ESA sliding automatic door system melds a modern appearance with advanced microprocessor control. Ideal for retail storefronts, commercial entryways, and health-care settings, the 4½"-wide header is designed to blend with industry-standard storefront profiles and is strong enough for free-span openings up to 16' in width. 877/DORMA-11. Dorma Automatics, Upper Marlboro, Md. **CIRCLE 212**

▼ Narrower gliding patio door

Andersen's 200 Series offers a streamlined selection of the most popular sizes and styles of windows and patio doors, priced to fit a wide range of project budgets. Andersen's 200 Series Narroline gliding patio door was designed with narrower door panels for a larger glass area, clear pine interior, and Perma Shield exterior in white or sandtone color. Also in the series is the 200 Series tilt-wash, double-hung window. Low-E glazing is available in select markets. 800/426-4261, ext. 1232. Andersen, Bayport, Minn. **CIRCLE 213**



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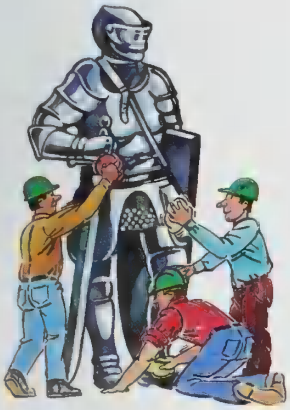

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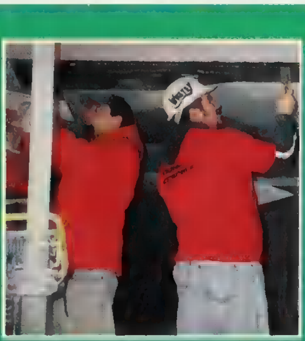

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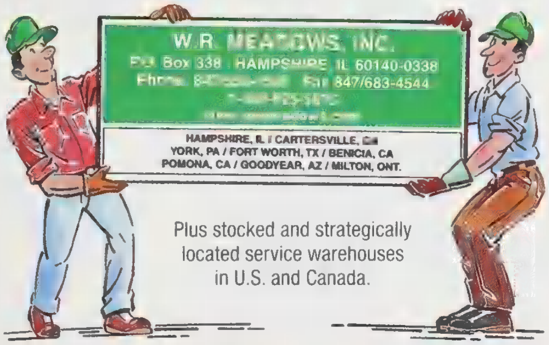
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Product Briefs

▲ Nutty rug

G.T. Design was set up in 1977 to explore the potential of industrial materials. In recent years, their research has concentrated on raw materials such as coconut, silk, and hemp fibers. The result is Coconutrug, a carpet of pure coconut fiber hand-woven on traditional looms and dyed with nontoxic colors. The rug is completely biodegradable, staticproof, and resistant to mold. It is intended for everyday residential or commercial use. 805/682-4661. G.T. Design, Santa Barbara, Calif. CIRCLE 214

◄ Modern, ancient covering

Armourcoat has created a line of polished and Venetian plasters in a combination of two and three dimensions. Armourcoat plaster has a stonelike finish that outperforms conventional high-volume interior wall finishes such as paint. Over 1,000 square meters of Armourcoat polished plaster was used in various finishes for the refurbishment of Tate Britain in London. 44 01732 460668. Armourcoat Surface Finishes, Kent, England. CIRCLE 216

▼ Don't mind the delay

Arconas launched Flyaway as a premier seating system for airports. Created by award-winning designer Douglas Ball, Flyaway is ergonomically contoured to provide a welcome resting spot for weary passengers. Flyaway's solid die-cast aluminum and steel frame construction was designed to ease the workload of airport maintenance personnel. 905/272-0727, ext. 312. Arconas, Mississauga, Ontario. CIRCLE 217

Product of the Month
Ultron Renew

Solutia has introduced Ultron Renew (right), a 100 percent recycled nylon 6,6 carpet fiber for the contract market. Ultron Renew utilizes post-industrial fiber and polymer products created during Solutia's nylon manufacturing process, before they enter the waste stream. Pigments, additives, and polymer concentrates are not recycled. Unlike lower recycled-content fibers, Ultron Renew is available in more than 30 solution-dyed colors.

In addition to developing new products, Solutia hosts the annual DOC Awards to recognize outstanding achievement in interior design in contract projects utilizing carpet made with Solutia Ultron VIP nylon fiber. In 2001, five firms won DOC Awards, including Michele Frigon and the project team at Partners by DESIGN, of Chicago. This firm won for their untraditional office design for Alternative Resources Corporation (above), a technology management and staffing service firm in Barrington, Ill. 866/UltronVIP. Solutia, St. Louis. CIRCLE 215

▲ The awning of a new age

Using a variety of metals, nontraditional fastening techniques, and blends of fabrics, Architectural Fabric Structures creates contemporary awnings, canopies, shade structures, and sculptures. Recent awning projects include a powder-coated steel frame with tensioned translucent fabric (above left), and a powder-coated steel frame with double layered mesh and opaque fabrics featuring an adjustable pitch to shed winter rains (above right). 415/289-0457. Architectural Fabric Structures, Sausalito, Calif. CIRCLE 218

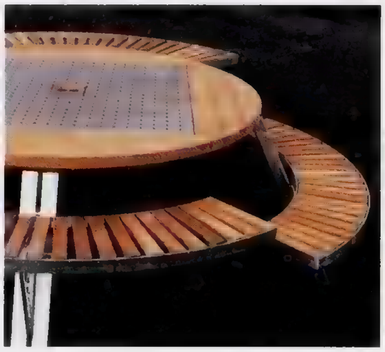
For more information, circle item numbers on Reader Service Card or go to www.architecturalrecord.com Advertisers & Products info.

Product Briefs

The latest in high-end designer furniture and traditional home interiors was on display in January for over 120,000 visitors at the Cologne International Furniture Fair. The dates for next year's show are January 13–19. *Josephine Minutillo*

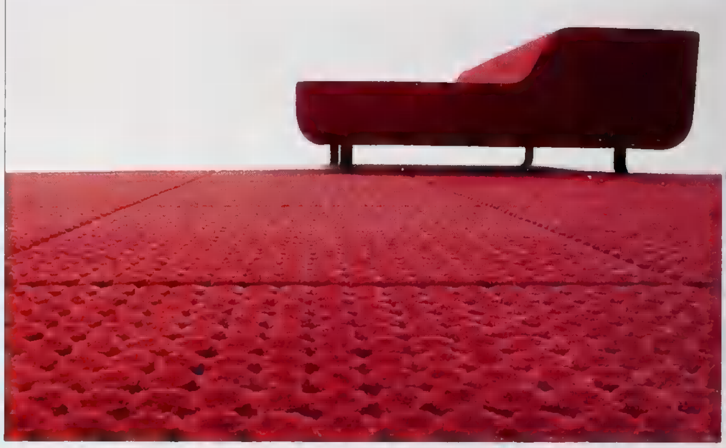
► Gargantuan garden table

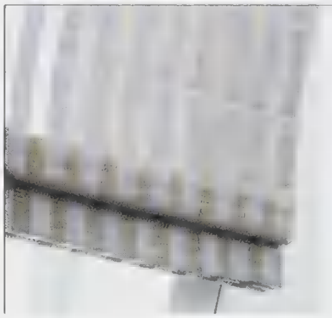
The multifunctional Gargantua was designed for informal get-togethers. Each of the four benches can be unhinged to make room for a high chair or wheelchair, or installed at different heights. With all the benches in the highest position, it becomes a giant table for up to 12 people. Teak with galvanized metal. 404/872-1050. Domus, Atlanta. **CIRCLE 219**



▼ Colorful collection

Although most Italian lines wait until the Milan Fair in April to introduce their new products, Paola Lenti presented a variety of new fabric colors and patterns that can be coordinated with their already extensive collection of carpets, felts, tapestries, and seating. Completely handmade of New Zealand wool, the area carpet range is available in various designs and 160 shades. All the creations in the printed felt collection can be customized according to taste and requirements. 888/545-5073. Counterpoint Design Resource, El Paso, Tex. **CIRCLE 221**





◄ Finnish fabrics

Woodnotes features carpets, fabrics, upholstery, and accessories all woven from spun paper yarn. The translucent vertical design of Open Sky by Ritva Puotila makes it ideal for use as roller or folding blinds, or as partitions and screens. Available in several colors. 314/454-0111. Centro Modern Furnishings, St. Louis. **CIRCLE 220**

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innovation - inside the box

The arrival of the Pilkington **Profilit**™ system has been dramatic with the specification, construction and completion of the system within key landmark projects. The **Profilit**™ system's dynamic use of light, created by combining alternative glass finishes with various light transmitting/insulating materials, produces the ideal glass solution for interior applications.

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Product Briefs Cologne Fair

▲ A visible difference

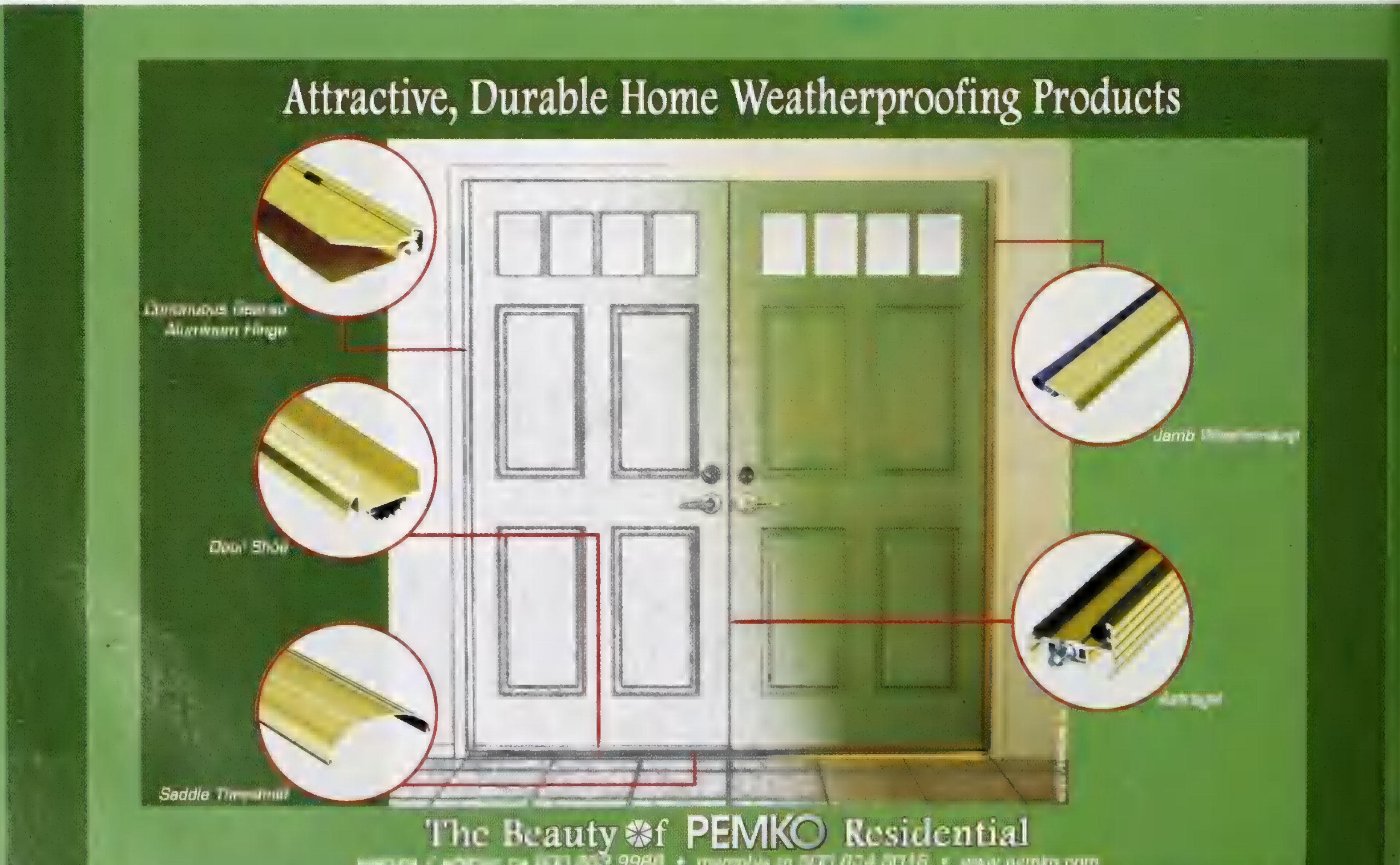
The Visible display case, exhibited internationally for the first time, has applications for retail, residential, and gallery spaces. The showcase is made of 6 millimeter, clear or frosted tempered glass. The frame is silver lacquered steel, with adjustable feet in the standing model. A horizontal and vertical wall-hung version is also available. The interior shelves can be inclined for special presentations, and the showcases can be custom designed. Standard length and depth is 120 by 45 centimeters. Available with lock and key. 415/543-5466. Limn, San Francisco. **CIRCLE 222**

▼ Scroll down

Hard edges are replaced by soft curves in Scroll, a new range of seating by Design Studio Vertijet—one of several new sofas introduced this year by German furniture manufacturer Cor. Composed of a wide, flat body that seems to hover above the floor, Scroll can be used separately as a chair, or as a sofa when combined with additional elements. It converts to a sleeper sofa with the back setting in the horizontal position and can be continually redefined thanks to the many combination possibilities of its various elements and adjustable backrest. 212/228-3600. SEE, New York City. **CIRCLE 223**

► Just in case

Among the new introductions this year from Interlübke was Case, an affordable mobile furniture system by Werner Aisslinger. It is available in several variations as shelves, a container, sideboard, or entertainment and computer rack, and comes mounted on castors or with feet. The translucent sides are available in blue, red, orange, and white. 212/832-8222. The M2L Collection, New York City. **CIRCLE 224**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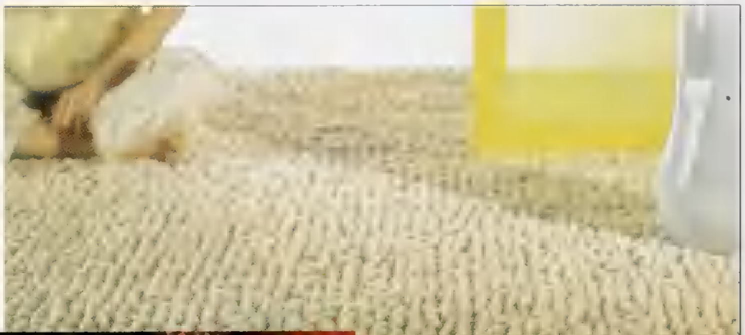
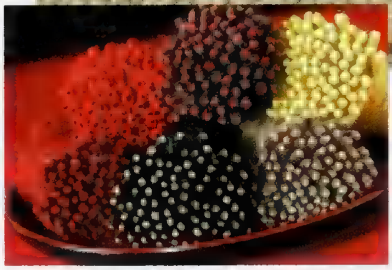
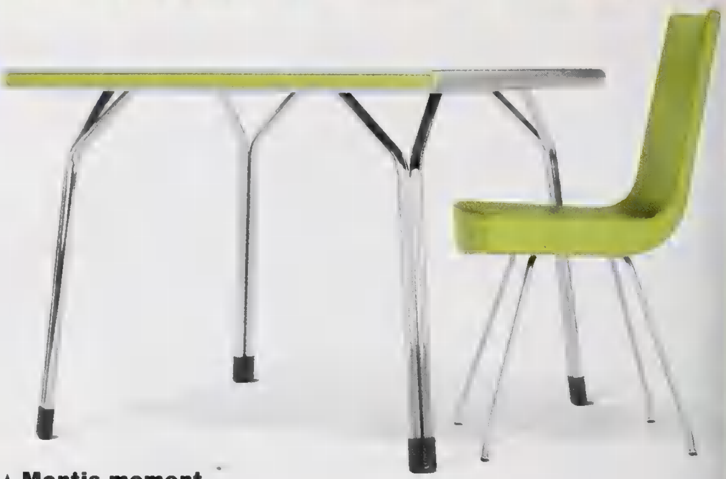
Product Briefs Cologne Fair





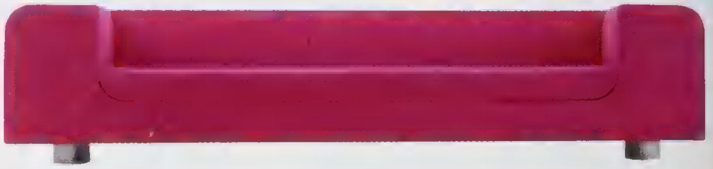
▲ Forget furniture

New this year from Dutch rug makers Danskina is Salto, a handwoven rug composed of individual loops made from 100 percent wool. Also available is Corale, a rug whose name derives from the unique look of its tufted fibers, also 100 percent wool. Both rugs are available in 12 different colorways and can be ordered in any size. The collection also features pillows that coordinate with the plush rugs to create a comfortable sitting and lounging environment to replace traditional seating furniture. 505/266-5245. Ideas for Living, Albuquerque. **CIRCLE 225**



▲ Montis moment

Until now Montis's collection has been limited to chairs and sofas. In an effort to better coordinate their pieces within a complete interior, the Dutch furniture maker introduced a new line of rugs by Christiane Müller, cupboards by Niels Bendtsen, as well as five new dining tables by Gijs Papavoine. The Ypsilon table has a top that is folded over with a filling in a different color. It is available in three lengths. The Malou, also by Papavoine, is a new formula for large upholstered sofas that comes in four lengths: 5 seater, 4 seater, 3 seater, or 1½ seater. 888/8-MONTIS. Montis America, Carrboro, N.C. **CIRCLE 226**



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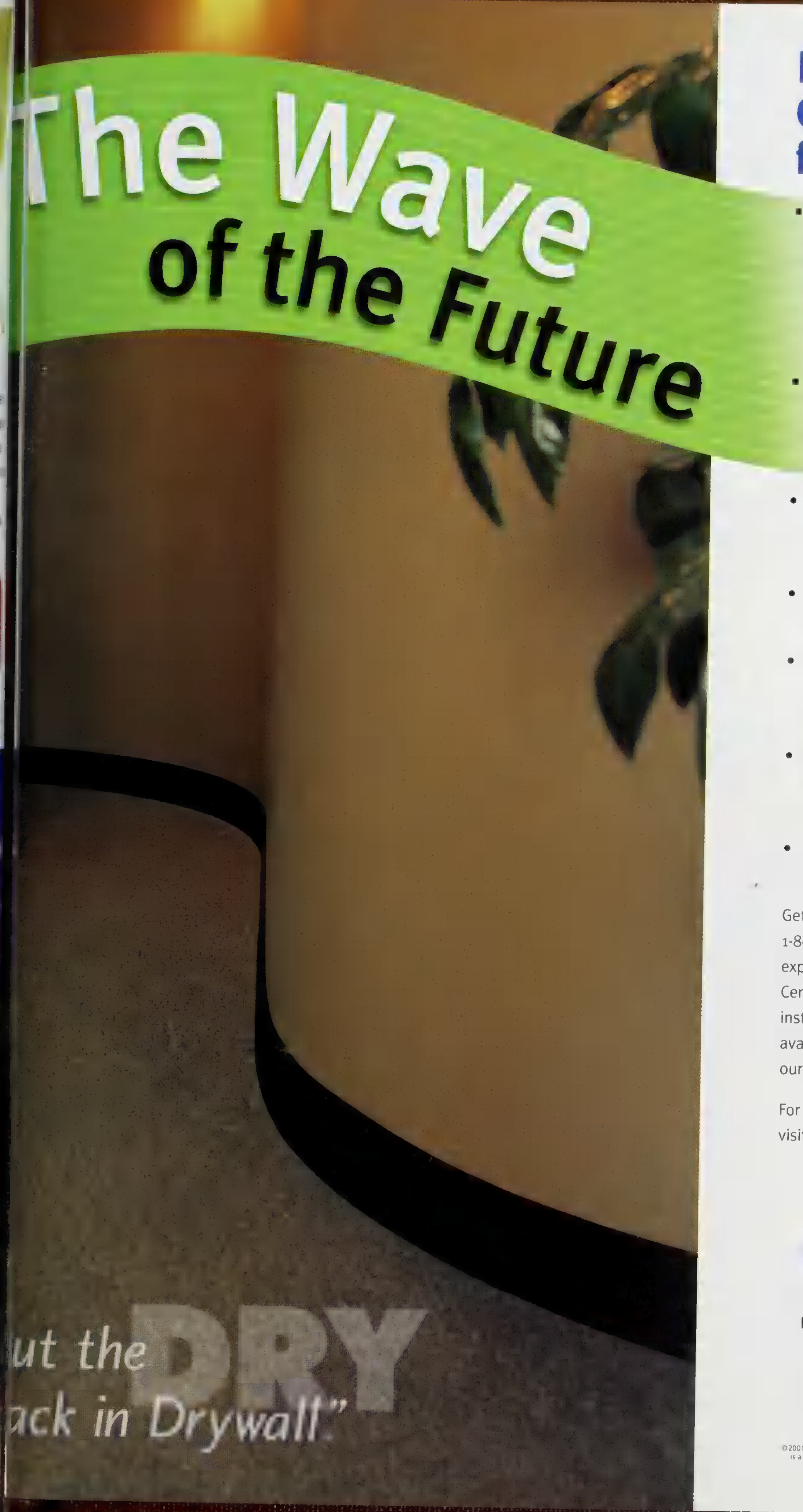

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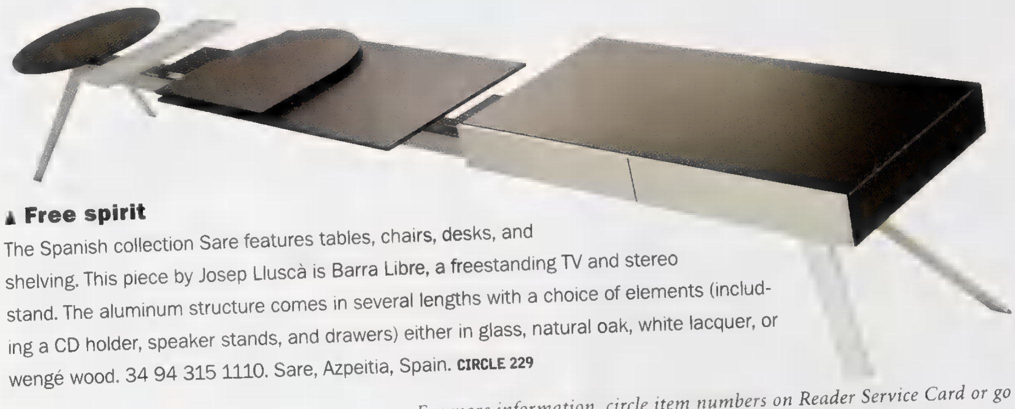
► Solid designs

Originally known for its solid wood tables, the German-British furniture manufacturer e15 has expanded its collection to include chairs, benches, shelves, and beds, as well as a new line of outdoor furniture presented for the first time in Cologne. They have broadened their material range, combining aluminum, stainless steel, leather, and felt with a selection of woods including oak, maple, cherry, and walnut. The Tablebench by Hans De Pelsmacker uses simple geometries to create a table with built-in seating. 65" long by 22½" wide by 29½" high. Available in solid oak or brushed aluminum. 215/765-4806. Icons of Design, Philadelphia. **CIRCLE 227**

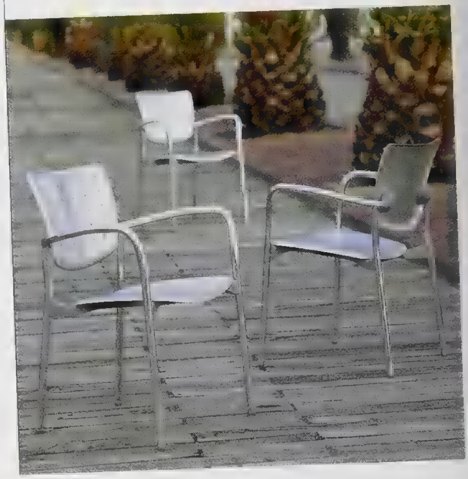


▲ Free spirit

The Spanish collection Sare features tables, chairs, desks, and shelving. This piece by Josep Lluscà is Barra Libre, a freestanding TV and stereo stand. The aluminum structure comes in several lengths with a choice of elements (including a CD holder, speaker stands, and drawers) either in glass, natural oak, white lacquer, or wengé wood. 34 94 315 1110. Sare, Azpeitia, Spain. **CIRCLE 229**

▼ Street smart

Brand-new from Catalan designer Josep Lluscà is Street, a chair whose durable construction and refined look make it equally suitable for use indoors and out. Discreet and light, the frame is made from a polished, anodized aluminum tube. The stamped aluminum surfaces of the seat and back lie on injected polymer supports, solidly clamped by extruded profiles. The result of extensive research of materials and manufacturing, Street is ergonomic, stackable, and recyclable. 34 93 775 5651. Amat-3 International, Barcelona, Spain. **CIRCLE 228**



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Product Literature

Ceiling system portfolio

Armstrong's new 2002 ceiling systems catalog showcases the entire Armstrong ceiling and suspension system portfolio in one customer-tailored reference tool. Totaling 254 pages, the catalog utilizes new tabs to call out individual product groupings, including mineral fiber/fiberglass ceilings, MetalWorks, WoodWorks, i-ceilings, and suspension systems. 877/ARMSTRONG. Armstrong World Industries, Lancaster, Pa. **CIRCLE 230**

Stylish chair brochure

Stylex's new 12-page brochure details the Rhythm stack seating collection. The brochure presents arrangements of the chair models, product specifications, and ordering information. 800/257-5742. Stylex, Delanco, N.J. **CIRCLE 231**

Choosing the best signage

Best's Graphic Blast process carves copy and art into wood, Corian, Avonite, tile, stone, and practically all man-made materials. Best's new full-color catalog features ADA signage made from such materials, plus other interior and exterior architectural signage. The company also offers detailed specifications and dimensions to help in the selection of Best products. 800/235-BEST. Best Manufacturing Company, Montrose, Colo. **CIRCLE 232**

Door accessory catalog

ODL has introduced the company's new comprehensive 2002 Full Line Catalog. The 52-page, full-color catalog features detailed information on the company's line of decorative door-glass options, accessory products, and variety of products for the home. 800/253-3900. ODL, Zeeland, Mich. **CIRCLE 233**

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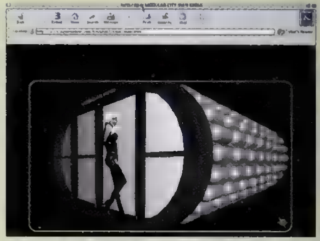

G.E. e-catalog **www.GELighting.com**

Site for Stockholm-based design store David Design **www.david.se**

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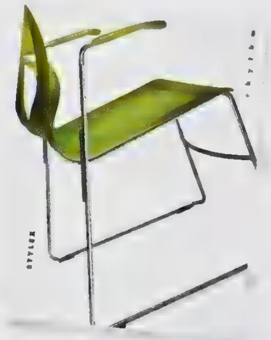

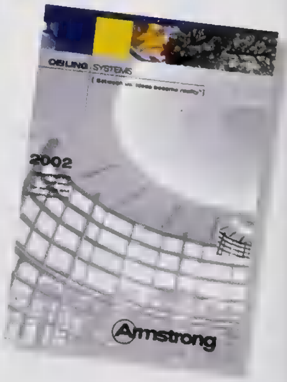

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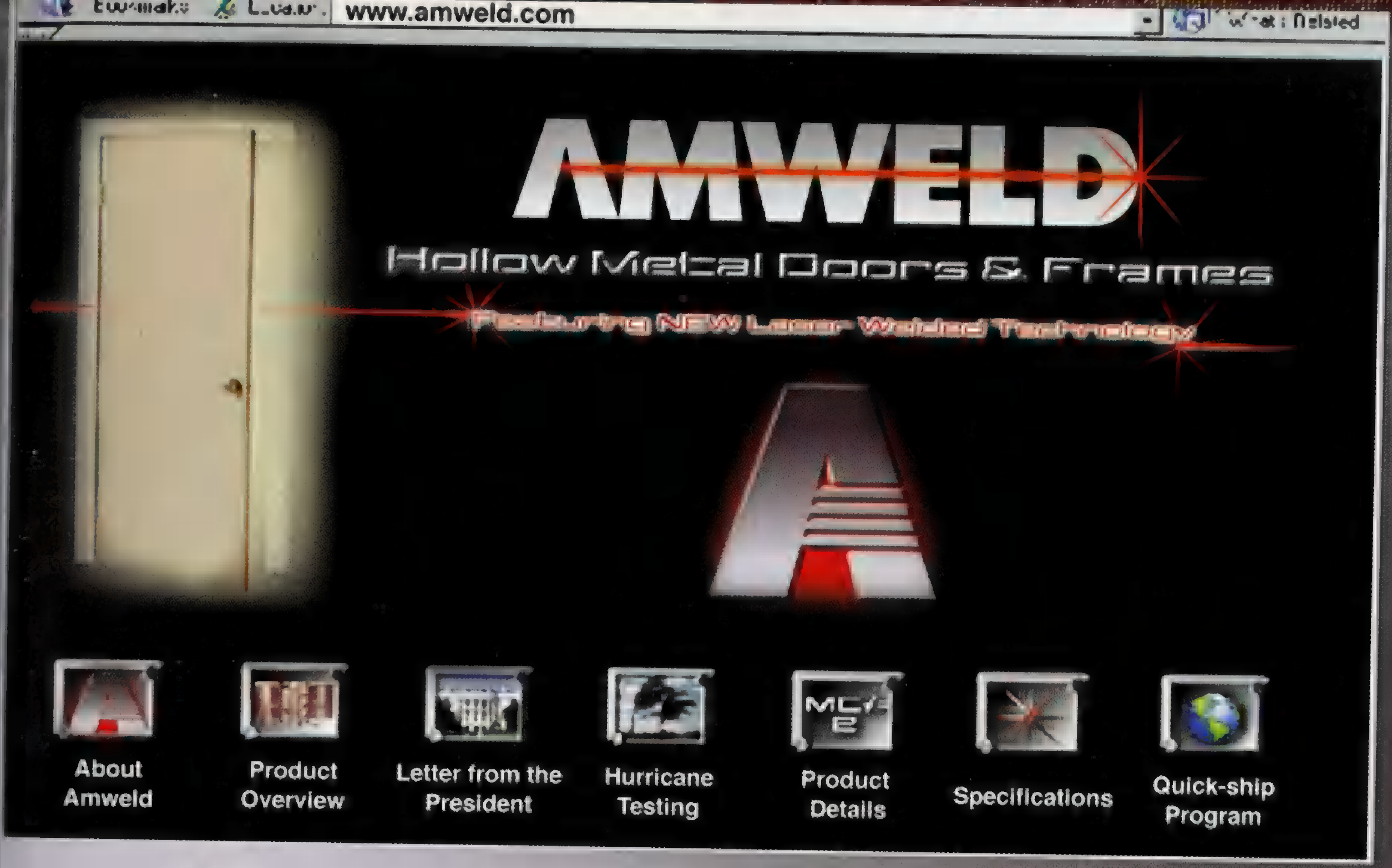

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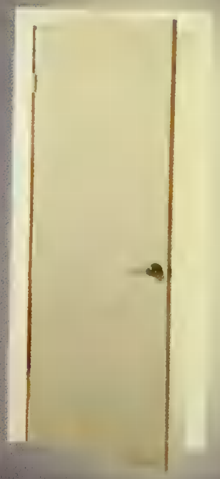

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Product Literature

Ceramic-tile buyer's guide

The Italian Trade Commission Ceramic Tile Department has published the eighth edition of the Buyer's Guide to Italian Ceramic Tile. This new, colorful edition covers 100 of the leading Italian producers of ceramic tile. It lists Italian, U.S., and e-mail addresses, Web sites, as well as primary U.S. and Canadian importers and agents. For a free copy, fax the Italian Trade Commission. 212/758-1050. Italian Trade Commission Ceramic Tile Department, New York City. **CIRCLE 234**

Stronger steel

Major groups representing the struggling U.S. steel industry and its workers have released a report that lists uses of steel in America's energy and transportation security applications, health and public safety, and building and construction. The complete report, entitled *A Strong U.S. Steel Industry: Critical to National Defense and Economic Security,* is available in hard copy or electronic transmission. 202/452-7100. American Iron and Steel Institute, Washington, D.C. **CIRCLE 235**

Wood finish guide

The Hardwood Council has published a new brochure called *The Finishing Touch* to help professional building and design professionals more effectively specify hardwoods. The 32-page booklet features a Stain Guide that depicts 21 North American hardwoods in clear, light, medium, and dark stains. The brochure also covers hardwood finishing basics, guidelines for specifying a factory finish, and an A–Z finishes glossary. 412/281-4980. Hardwood Council, Oakmont, Pa. **CIRCLE 236**

Decking estimator

Boardwalk Composite Decking and Railing, manufactured by CertainTeed, has introduced a time-saving estimating software system to accurately estimate standard and custom Boardwalk decking and railing projects for contractors. Using the CertainTeed-licensed software, professionals can estimate costs for decking and railing projects in a matter of minutes, instead of the hours the process requires when done manually. The software uses an on-screen worksheet and checklist and can incorporate both standard and custom deck shapes and designs into an estimate. 800/233-8990. CertainTeed, Valley Forge, Pa. **CIRCLE 237**

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THE NEW BERLIN *(continued from page 80)* Allee, the boulevard's Socialist Realist splendor has recently been carefully restored in all its urbanistic emptiness (page 78).

Learning from Berlin?

Some observers detect a character flaw in Germans' trust in the redemptive or corrective power of architecture. After all, if tragic history is reconciled through architecture, does that free people of personal responsibility—a dismissive "we've dealt with that, now let's move on" attitude? Many decent people thought that Germany's deep-seated love and commitment to culture would prevent Nazi barbarity. Many Jews who thought that way paid with their lives.

The focus on history, memory, and on urban identity can strike the outsider as an obsessive kind of navel-gazing, but it is part of a genuine transformation, say even hardened skeptics. Daniel Libeskind, who has fought many battles over how history should be presented in his own buildings and elsewhere in Berlin, admires the fact that "people see these buildings as expressions of the force of history rather than as about themselves." They hope to bequeath to the future a promising legacy in the city they're building. "Every building here, even an office building, has some visibility, and people ask what it will look like and why it is that way."

In the wake of autumn's terror attacks, Americans learned that they had few places that represented their united values, almost nowhere to grieve as a community or to sort out together what happened. Can American cities learn from Berlin's example? "There's a huge difference in how society is organized and does things there," says Michael Blumenthal. "Architectural structures are executed to have a connection to each other," he adds. "They are not done just to make money, they are done to relate to history and to have a certain collegiality to them that the public accepts. In Germany, societal needs are met with public funds and there is clearly a more coherent and comprehensive view.

"There are negatives in Europe," he adds. "It's heavily bureaucratized; things take a lot of time; it's not efficient. But it does have that positive effect." Libeskind, who practiced for several years in Los Angeles, agrees. "In America, the private world of power and money is seen as an inevitable force that dictates city form. And so architecture becomes little more than advertising. In Berlin, as in the rest of Europe, there is a notion that public space and civic space are important and of concern to everyone. Dealing with that can be difficult, but it's why I'm still here."

In spite of the monumental effort, Berlin is still visibly wounded from the depredations of war and political division. The planned cluster of skyscrapers has yet to rise from the asphalted expanses of the Alexanderplatz. Among the city's cultural gems, its Museum Island remains a romantic semi-ruin as lack of funds has drastically slowed renovation and reinstallation (page 78). The city's endless miles of precast-concrete housing blocks are dispiriting. But colorful, provisional forms of emergent capitalism poke out of its many disused corners. In short, the city remains alive and open to possibility.

"The attempt to create homogeneity was not successful," says Matthias Sauerbruch. "It denied what is Berlin's foremost characteristic, which is of collage or fragmentation or palimpsest. It's never been a complete city in the Parisian sense. I guess that makes it more American." The city is, in an old cliché, "forever to become and never to be." That may truly be the modern condition, not just in Berlin, but in cities everywhere; perhaps the best they can hope for and all that they can represent. ■

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MILWAUKEE ART MUSEUM *(continued from page 102)*

building and the lakefront, but they still have a presence of their own, with the hedges forming roomlike lawns.

To be sure, the addition has rough spots, especially in the unrefined connection between it and the existing buildings. When the brise-soleil is closed, for example, the tentlike reception hall appears too small to provide an effective counterpoint to the war memorial. Also, the base of the reception hall seems cartoonish—the window mullions are larger than Calatrava had wanted, and the hall's proportions are inelegant due to the bulky concrete structure that supports it.

But these problems are quickly forgiven once the visitor steps—or drives—inside, especially if the point of entry is the 100-space parking garage beneath the galleries. Here, in an inspired departure from the typical heavy-handed, post-and-beam garage, Calatrava uses inclined, steel-reinforced concrete columns that narrow toward a footlike steel base. Their lyrical, dancing effect recalls the famous "lily pad" concrete columns at Frank Lloyd Wright's S.C. Johnson & Son Administration Building in nearby Racine, Wisconsin.

Certainly there are echoes of Johnson Wax's streamlining in the parking garage's gracefully curving concrete walls. But it seems less important to compare Wright and Calatrava than to observe that, in Milwaukee, as in his earlier works, Calatrava's exposed structure imitates the figural complexity of nature rather than following a reductivist, Miesian mode. The addition thus has an inherent human scale. It seems as much a house as a culture palace, though there is no denying its cathedral-like identity, especially in its soaring, sun-washed reception hall and in the gallerias that extend outward from it like the side aisles of a church.

By siting the addition's temporary exhibition gallery just off the hall, Calatrava makes clear that one has entered an art museum rather than a generic room. Within the exhibition space, Calatrava's expressed concrete ceiling beams have a strong presence, yet they are not so strong that they overwhelm the art. Movable wall dividers are low enough to lend the gallery intimacy, but the visitor still feels like he is in an expansive space, one that bears Calatrava's mark.

The finest design strokes in the addition are the twin gallerias that flank the gallery and lead to the original buildings. Far from being mere passageways, the gallerias, which house changing displays of contemporary art, are destinations that are distinguished by the rhythmic, lyrical expression of their arching concrete ribs.

Structure in the service of sculpture

As in the garage, the ribs are grounded in steel joints that at once suggest the human foot and express the steel that reinforces them. Yet here, the concrete, painted white, seems otherworldly, dematerialized. Does this mean Calatrava isn't being "honest" with materials? No. Again, to great effect, he puts structure in the service of sculpture, drawing out, as he has said, "the inner potential for poetic expression that materials possess."

That potential has been handsomely realized. The addition takes us in dazzling new directions even as it reminds us of the traditional importance of materials and structure. True, this building does not match such masterpieces as Louis Kahn's Kimbell Art Museum in Fort Worth or another famous birdlike building, Saarinen's TWA Terminal outside New York City. Nevertheless, in contrast to the striking but largely nonfunctional Sydney Opera House, the Milwaukee Art Museum addition superbly serves its complex program while creating an instant landmark. For Calatrava, it represents an enormously successful American debut—a powerful hint of what he still may accomplish by embedding structure into sculpture. ■

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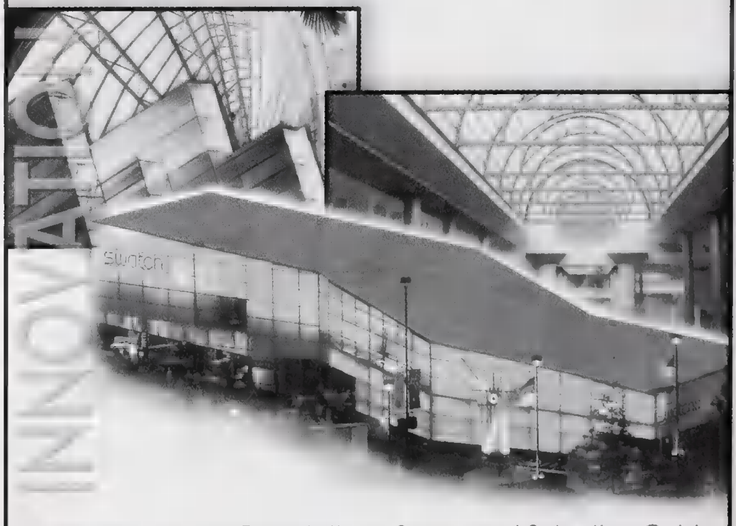

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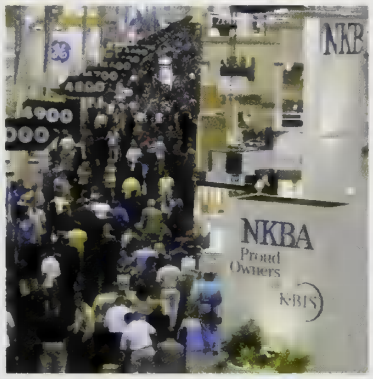

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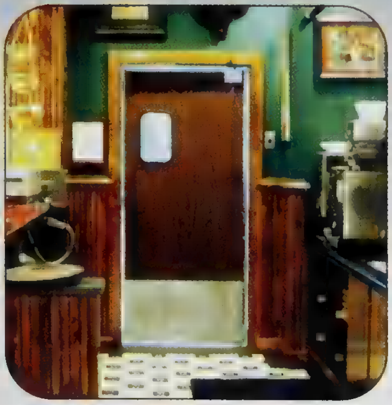

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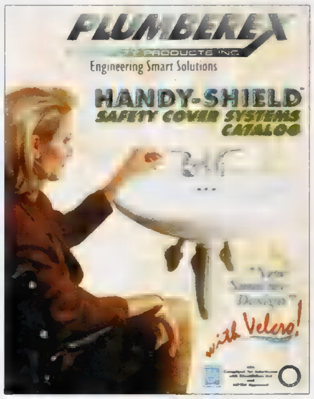

Plumberex Specialty Products, Inc. is the only company that manufactures a complete line of ADA safety covers for commercial & residential applications, meeting all building & fire codes with a -0- smoke rating. The Handy-Shield™ Safety Cover is the one and only ADA safety cover on the market with a "Dual" fastening system to help deter theft! For more information call 800-475-8629, Website: www.plumberex.com or email: plumberex@earthlink.net

Plumberex Products, Inc.

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Architectural Luminaries

Space Cannon Illumination proudly introduces our architectural color wash HSR fixture, the Focus, available in 700w and 1200w power sources. This fixture has an onboard computer to control the 3 dichroic tubes, zoom and shutter and includes a kit of 4 lenses for beam shaping up to 90°. 888-705-1028 www.spacecannon.com

Space Cannon

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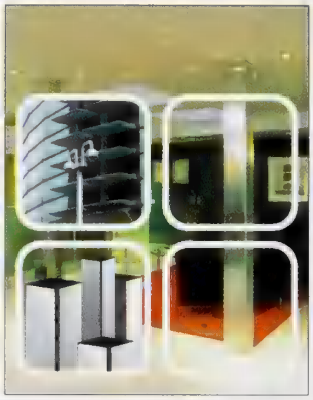
State of the Art Stainless for Construction



Stainless Tubes for load-bearing structures, double facades and interior elements enable an attractive and durable result with economical life cycle cost. Safe and hygienic. Surface finish e.g. brushed, polished or pickled. Extended range: up to 12" square x 1/2", and rectangular up to 16" x 8" x 1/2". We offer expert consultation for our clients' projects and technical support for designers on our website. For inquiries call +1-610-525-7706. Our new website: www.stalatube.com

Stalatube Inc.

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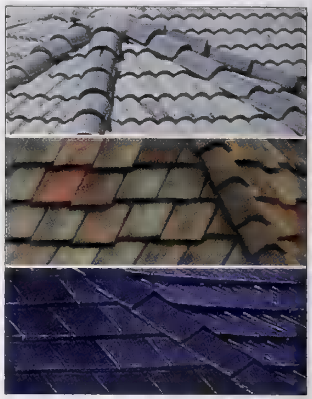
Tile Roofs: Variety & Style That Lasts a Lifetime



A tile roof adds classic beauty—and real value—to any structure. Tile comes in an array of colors and finishes, from bright blue to subtle brown, rough textured or smooth. They can simulate wood or slate, and be installed in a variety of patterns. And tile roofs are so durable they can last 50 to 100 years! For real beauty and value, nothing compares to tile. Call 1-888-321-9236 or visit us at www.rooftile.org.

Roof Tile Institute

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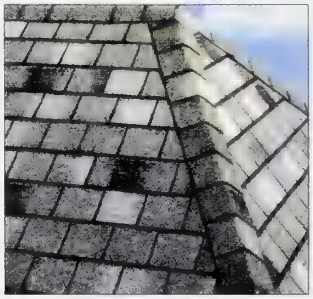
Hatteras®



An oversized 18" x 36" fiberglass asphalt shingle designed to withstand hurricane force winds. Features a dramatic eight-inch exposure; deep one-inch shadow lines; seven colors; and a 40-year limited warranty, including 10-year warranty coverage against winds up to 110 miles per hour. UL certified to meet ASTM D3462 performance standards; Miami-Dade approved; algae resistant.

CertainTeed Corporation

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ALDES ventilation specialists offer multiple solutions to noisy and ineffective bathroom fans. Quality remote mounted fans provide both quiet and effective exhaust. Systems available for 1 to 6 baths. Simple to install. Energy efficient. Cost Effective. Super quiet. ALDES-the art of ventilating. American ALDES Ventilation Corp. 4537 Northgate Court, Sarasota, FL 34234-2124 Phone: 800-255-7749 www.americanaldes.com info@aldes-us.com

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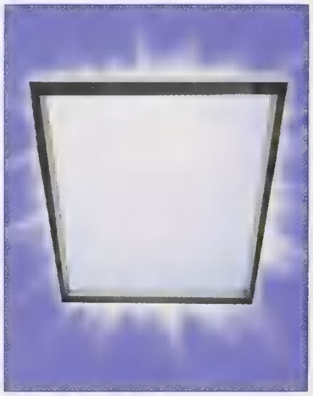
Insulated Translucence in Glass



Quality buildings can now have all the benefits of insulated translucent glazing PLUS the timeless beauty & durability that comes only from glass. Unlike plastic solutions, SOLERA™ insulated translucent glazing units deliver over 70% light transmittance plus U values of .25 to .14. Curtain wall, sloped, skylights....glass to architectural spec. Call 902-794-2899 or visit www.advancedglazings.com

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SMC®NOC Vision™... A 24/7 Console Solution

Design flair, flexibility and comfort with the SMC® NOC Vision™. The modular construction, numerous configuration possibilities, multiple tiers, company color accents as well as the many other unique features offered compliment your work environment perfectly. Find out more about the SMC® NOC Vision™ at www.smcplus.com or call 1-800-SMC-PLUS.

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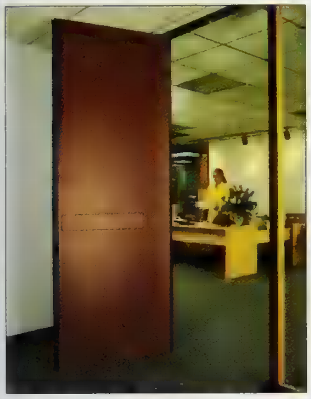
Applications



The new flush exit device is designed for use on TOTAL DOORS in single, pairs and double egress pairs. Ideal for corridor & elevator lobby applications in all commercial facilities. The exit device allows continuous, uninterrupted sightlines in corridors when doors are pocketed in the open position. Its quiet operation is ideal anywhere noisy hardware is a problem. TOTAL DOORS can be retrofitted into existing door frames, saving time & expense.

Openings

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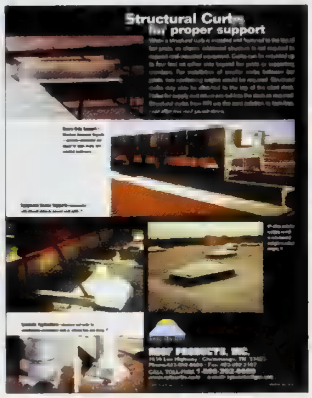
Structural Curbs for Proper Support


Structural Curbs for proper support
ROOF PRODUCTS, INC.

When a structural curb is installed and fastened to the top of bar joists, as shown, additional structure is not required to support roof-mounted equipment. Curbs can be mounted up to four feet on either side beyond bar joists or supporting members. May also be attached to top of steel deck. Structural curbs from RPI mean leak-free, cost-effective installation. 800-262-6669; Fax 423-892-2107; www.rpicurbs.com

Roof Products, Inc.

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Three-Sided Fireplace for Unlimited Installations

Heat-N-Glo introduces model PIER-TRC, a three-sided direct vent fireplace that can be terminated vertically or horizontally to accommodate nearly any application. The PIER-TRC is perfect as a room divider, bar, end of counter or a wide variety of creative installation possibilities. As with all Heat-N-Glo fireplaces, the PIER-TRC can be operated by remote control for the ultimate in convenience. Call 888-427-3973.

Heat-N-Glo

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Columns, Balustrades & Mouldings

Melton Classics columns, balustrades and mouldings are the standard for quality and design. Columns are offered in fiberglass, poly/marble, GFRC and wood. Balustrades are offered in synthetic stone, poly/marble, polyurethane and cast stone. Ask us about cast stone and polyurethane mouldings and details. 800-963-3060, meltonclassics.com

Melton Classics

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PORCH-LIFT® Vertical Platforms

PORCH-LIFT® Vertical Platform Lifts from Access Industries are designed to raise and lower a wheelchair user from one level to another indoors and outdoors for public buildings of all kinds. Easy to install and operate, the lifts require little to no site modification to install next to stairs or a landing. Standard models can be installed in a custom hoistway (shown above) to blend with any building design or accessibility plan.

Access Industries

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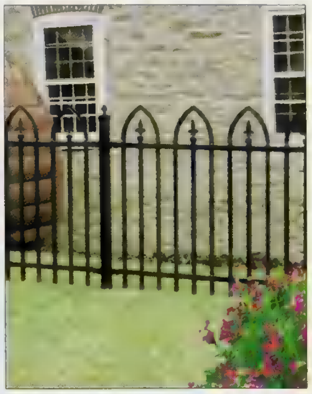
Ornamental Picket Fence with a Purpose



Monumental Iron Works™ is a modular system with the solid look & feel of authentic wrought iron. When assembled, it creates one of the strongest ornamental fence systems on the market. Welding processes are eliminated to avoid red rust problems. MIW utilizes a duplex coating of polyester resin over hot-dip galvanized steel for corrosion protection. Master-Halco, Baltimore, Maryland 21040. 410.676.2744 Email: spec@fenceonline.com Web site: www.fenceonline.com

Monumental Iron Works™

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Applied as a slurry coating Xypex is a chemical treatment that waterproofs by penetrating the concrete with a crystalline formation that "plugs" the pores of the structure preventing water seepage. Xypex is ideal for use on the "inside" of wet underground structures. Call toll free 1-800-961-4477 or visit our web site at www.xypex.com

Xypex Chemical Co.

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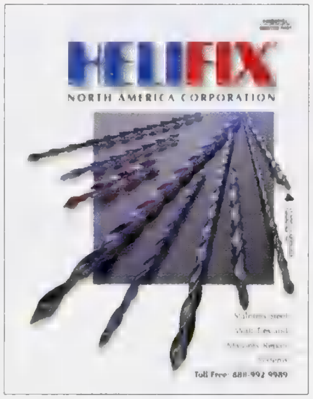
Stainless Steel Retrofit Wall Tie System



The unique Helifix 'DryFix' stainless steel remedial wall tie system is used to stabilize and strengthen masonry walls in both high rise and domestic buildings. The 'DryFix' system involves no toxic chemicals or complex expander devices while providing a fast, cost effective, stress free result in most common building materials. Helifix ties may also be used in new construction and masonry refacing. Call 888-992-9989 for further information.

Helifix

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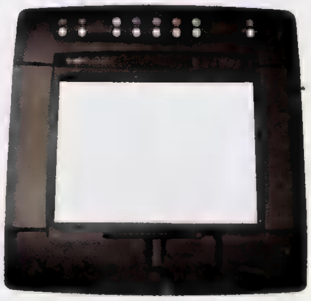
SMART Sympodium™ IM



SMART Sympodium™ IM easily integrates into a custom-designed podium or desk to create an interactive presentation environment. Featuring an interactive console, the SMART X-Port™ 30 and SMART Board™ Software, Sympodium IM helps your clients deliver their material more clearly and effortlessly than ever before. For more information, visit www.smarttech.com/products

SMART Technologies, Inc.

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Messmer's UV Plus for Hardwoods

is an oil-based natural wood finish designed specifically for exterior hardwoods such as ipe and mahogany. Its unique combination of natural and synthetic oils and other premium ingredients protects and conditions wood while maintaining a natural appearance. UV Plus penetrates into the wood to protect it from the damaging effects of light and moisture, while reducing warping, cracking and shrinking. Call 800-731-3669 or visit www.messmers.com

Messmer's

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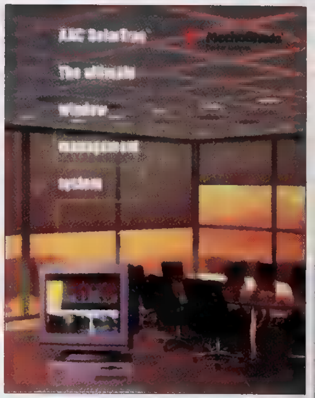
AAC SolarTrac™ Window Management System



The AAC SolarTrac™ Window Management System tracks the sun to incrementally adjust ElectroShades® automatically and building wide, to optimize the shadecloth's solar protection and energy efficiency characteristics. AAC SolarTrac™, using a PC-based program, factors in the sun's angle of incidence, solar heat-gain, allowable solar penetration, brightness and glare control based on the building's specific location. 718-729-2020 or www.mechoshade.com

MechoShade Systems, Inc.

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FAAC Introduces New Slider

FAAC is the world's largest specialized manufacturer of operators for swing, slide and barrier gate systems. The new Model 885 is a powerful chain-driven slider designed for residential and commercial applications. The 885 is UL 325 compliant and offers continuous duty operation, "soft stop" on opening and closing and master slave capabilities. Call 1-800-221-8278 for a brochure or visit www.faacusa.com.

FAAC International, Inc.

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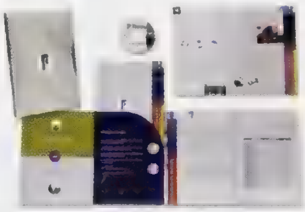
Steel Door & Frame Specification Guide



Fleming steel doors and frames introduces the Architectural Specification Guide. This kit has been prepared to provide architects with the information and tools needed to assess, select and specify steel doors and frames. Fleming is one of North America's leading manufacturers of commercial steel doors and frames.

Fleming Door Products

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Panelfold's Best Kept Secret!

Sonicwal® acoustical, wood folding partitions – Panelfold's best kept secret! Acoustical ratings to STC 50 and NRC 70, manually or electrically operated. Sonicwal® partitions may be specified in a wide variety of surfacing materials. Panelfold Electronic Library Version 3 on CD ROM available upon request by FAX (305-688-0185) or E-mail: sales@panelfold.com..Please visit our website: www.panelfold.com

Panelfold

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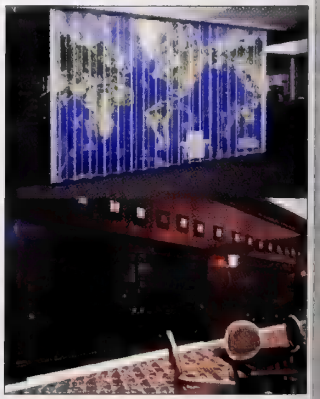
Beautiful Doors for Interior Architecture



Some will say that nothing is more beautiful than wood. We'd agree. Woodfold custom made accordion & roll-up doors (available in hardwood & non-hardwood finishes as well) are both functional & beautiful. We have models available for use as sight, security, & acoustic applications. Our solid hardwood roll-up doors coil conveniently overhead. And, to assure on time completion of your projects, we have the industry's best production cycle. Complete architectural binder available upon request.

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It's Xtreme 100% recycled resilient rubber flooring from Dodge-Regupol. Take your pick from 38 enviro-friendly eye-poppers. And we can custom cut logos or custom blend colors. Color it special with ECOsurfaces! Call toll free 1-877-ECO-SURF (326-7873) or log on to www.regupol.com.

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Keystone Retaining Wall

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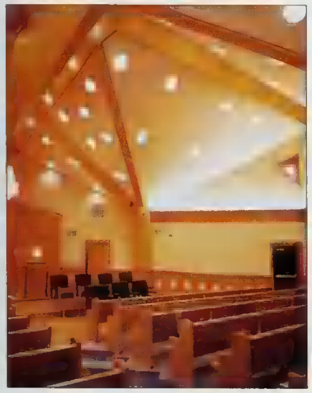
Acoustical Stretch Ceiling System



The Eurospan System is a wide span acoustical treatment with a smooth, white, monolithic appearance. With NRC values from .75 to 1.00, Eurospan has excellent acoustical absorption. Use the Eurospan System for flat or vaulted ceilings, domes, barrel vaults, and clouds. Perfect for new construction or renovation. Further information: (800-359-3312); www.euro-span.com

Wall Technology

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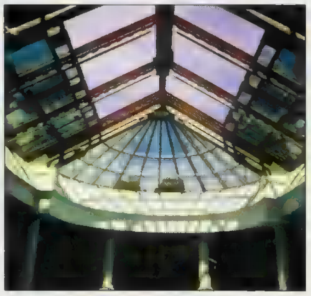
Retractable Roof Enclosures & Skylights



Custom designed retractable roof panels and operable skylights create year-round settings. At the touch of a button, motorized panels retract to open 50% of the roof area, letting in sunshine and fresh air. Maintenance-free thermally broken aluminum framing. Enclosures ideal for restaurants, patios, pools and atriums. For more information, call 800-267-4877, Email: openaire@openaire.com or visit www.openaire.com

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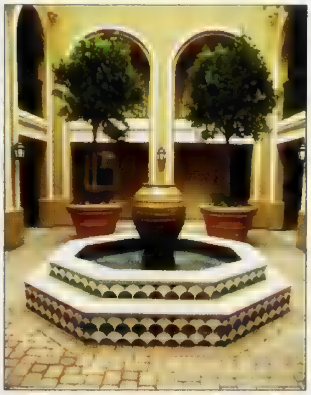
Classic Wall Cap



Classic Wall Cap combines distinctive good looks with high strength, hardrock concrete. You will find that Classic Wall Caps work perfectly as garden bench seats or as a design element that will refine your walls appearance. Classic Wall Cap is available in a variety of colors and finishes. Call toll free 1-800-572-9029 for our free CD. Visit our web-site: www.stepstoneinc.com

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Photo: Steven Young

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ARCHITECT/PRODUCTION MANAGER

Multi disciplined architectural firm is seeking Illinois registered architect with minimum ten (10) years experience to manage production of twelve (12) person firm and looking to expand his/her experience into a partnership relationship. Competitive salary and benefits. Call John at (847) 567-8100.

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ARCHITECT

Assist with the preparation of design incl. materials, colors & equip. integrates engineer elements into unified designs. Prepares scale drawings. Assists with the admin of contracts incl. monitoring for compliance with drawings & codes. 40Hr. wk. Job/Interview Site: Culver City, CA. Send resume to Morris Architects Inc., P.O. Box 2386, Culver City, CA 90231

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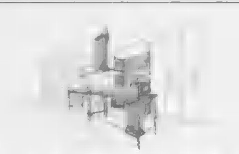

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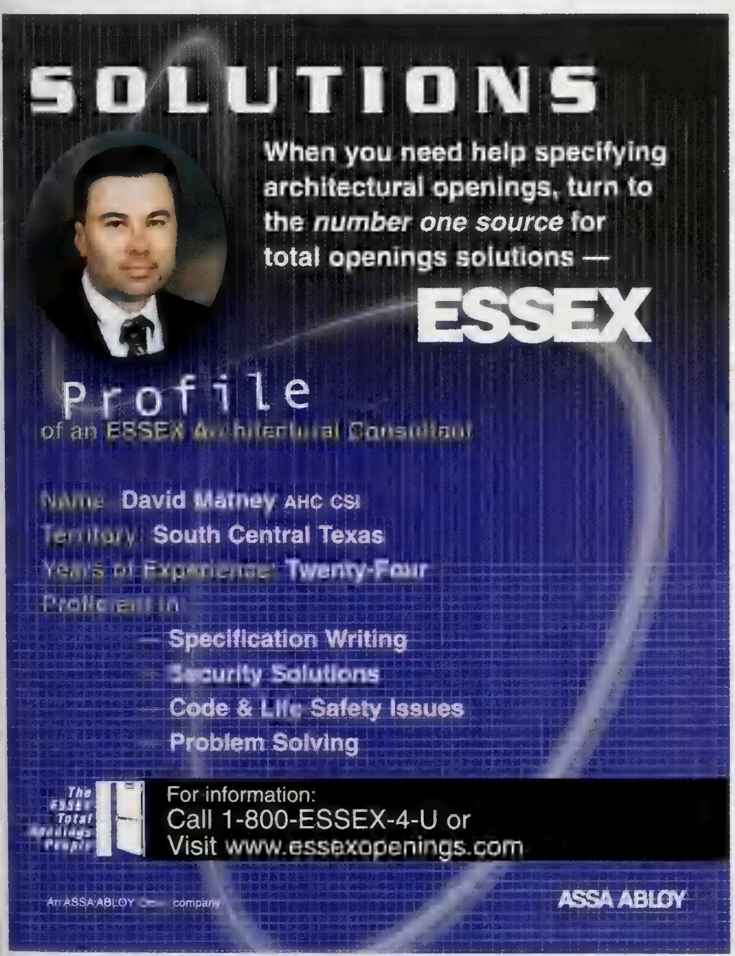
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Profile

Andrew Altman: Planning for our nation's capital

Interviewed by John E. Czarnecki, Assoc. AIA

This year marks the 100th anniversary of the McMillan Plan, which reinforced the Washington, D.C., monumental core in the spirit of the 1791 L'Enfant Plan. While Washington is one of the most beautifully planned cities in the country, city planning had been an afterthought for recent mayors. That has changed under current mayor Anthony Williams, who appointed Andrew Altman as director of the D.C. Office of Planning in 1999 and quickly increased Altman's staff from 12 to 66 people. Altman, formerly a planner in Oakland and Los Angeles, is reasserting the role of city planning in our nation's capital, which has had to balance security with openness.

Q: *Washington, D.C., is a very different city, not only since Marion Barry was mayor, but in the months since September 11. What is Washington to you?* It's a living, vibrant city—not a fortress. That's the message we have to get out to people. And it has been my most fundamental challenge, among many, to bring back a vision for this city that really is from the ground up, from its neighborhoods. It's not just about monuments and federal buildings, but it's a living, breathing city. Planning is now given stature, legitimacy, and support in Washington. It's been important to rebuild confidence in planning again in this city—people had lost confidence because planning was absent for so long.

How do you work with the various federal planning agencies in Washington? What I've been trying to do is assert the city's role with respect to planning together, as opposed to planning separately. Our concern is much broader. Planning in Washington is no longer just a federal enterprise. The city is now asserting its own vision.

You're currently working on the Anacostia River waterfront. How will this impact the city? I'm passionate about remaking Washington into a waterfront city, which is one of my highest priorities. Seventy percent of our waterfront is owned by the federal government—whether it's federal property or city property, it's all about the city. So we're working very closely with all of the agencies along the waterfront—this includes the General Services Administration, the National Parks Service, the Navy—and doing a collaborative waterfront plan, with the city leading the charge. That's a fundamental tectonic change that has occurred since Mayor Williams was elected.

Tell me about your downtown plan. We introduced it last November, and we have seen that downtown is really starting to flourish. We have more than 6 million square feet of office construction and more than 2,000 units of housing being built there. We have such a strong office market that the challenge has been to introduce mixed uses, to introduce residential, and to create a downtown that doesn't close at five o'clock. The opportunity to re-image the area is really important.

How is the city commemorating the 100-year anniversary of the McMillan Plan? The mayor wants to produce the next 100-year plan for the city—to build it from the neighborhoods and to also look regionally. The region is burgeoning, so the next 100-year plan has to really look at that.

Photograph by Alan Karchmer/Esto.

For more of the Altman interview, visit www.architecturalrecord.com.

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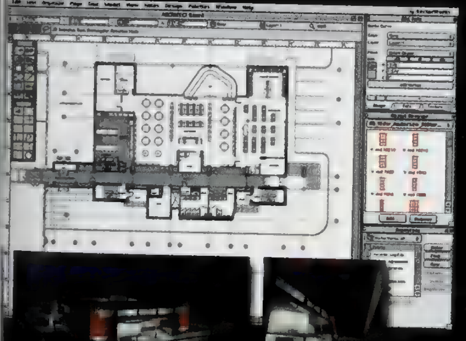

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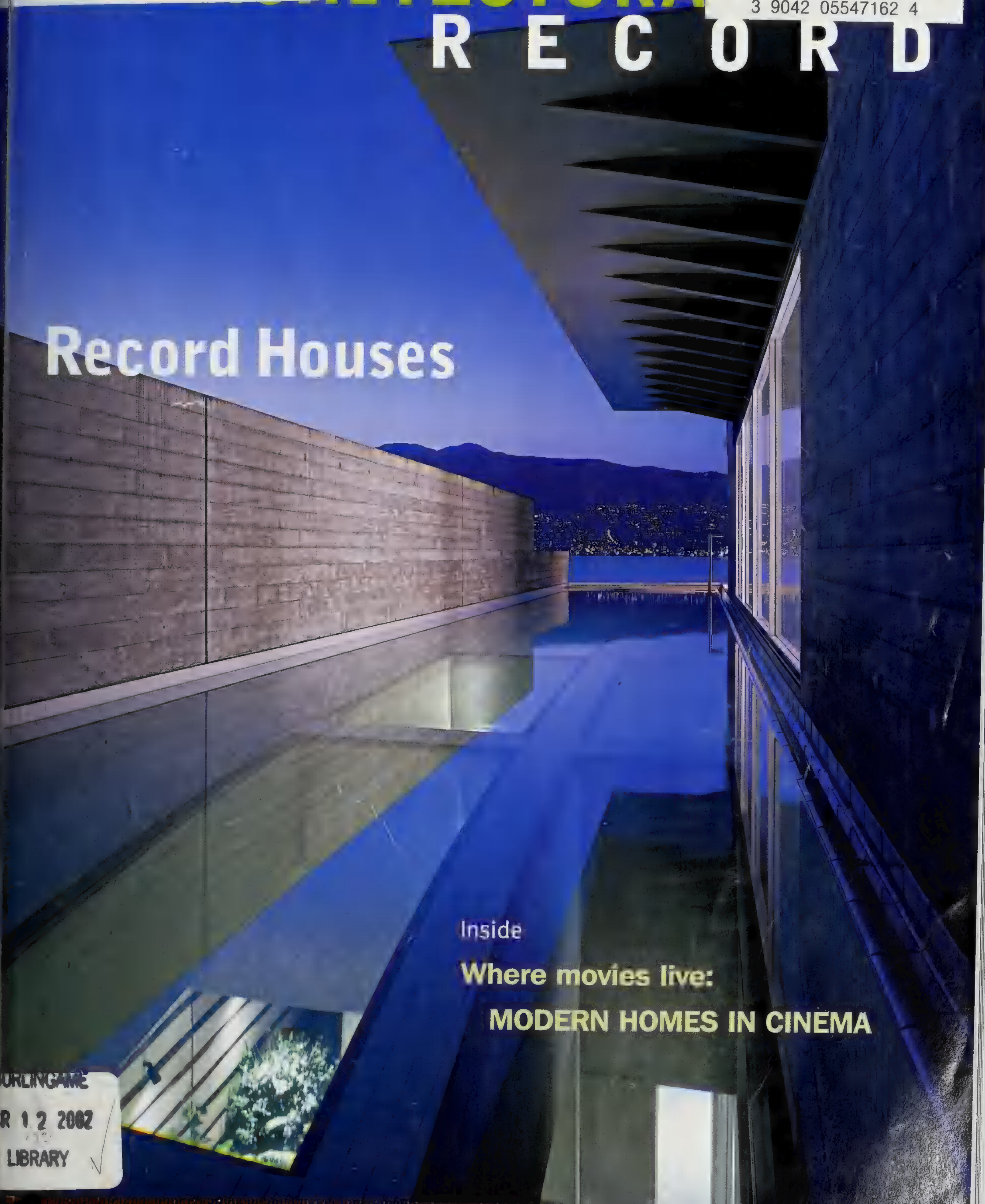

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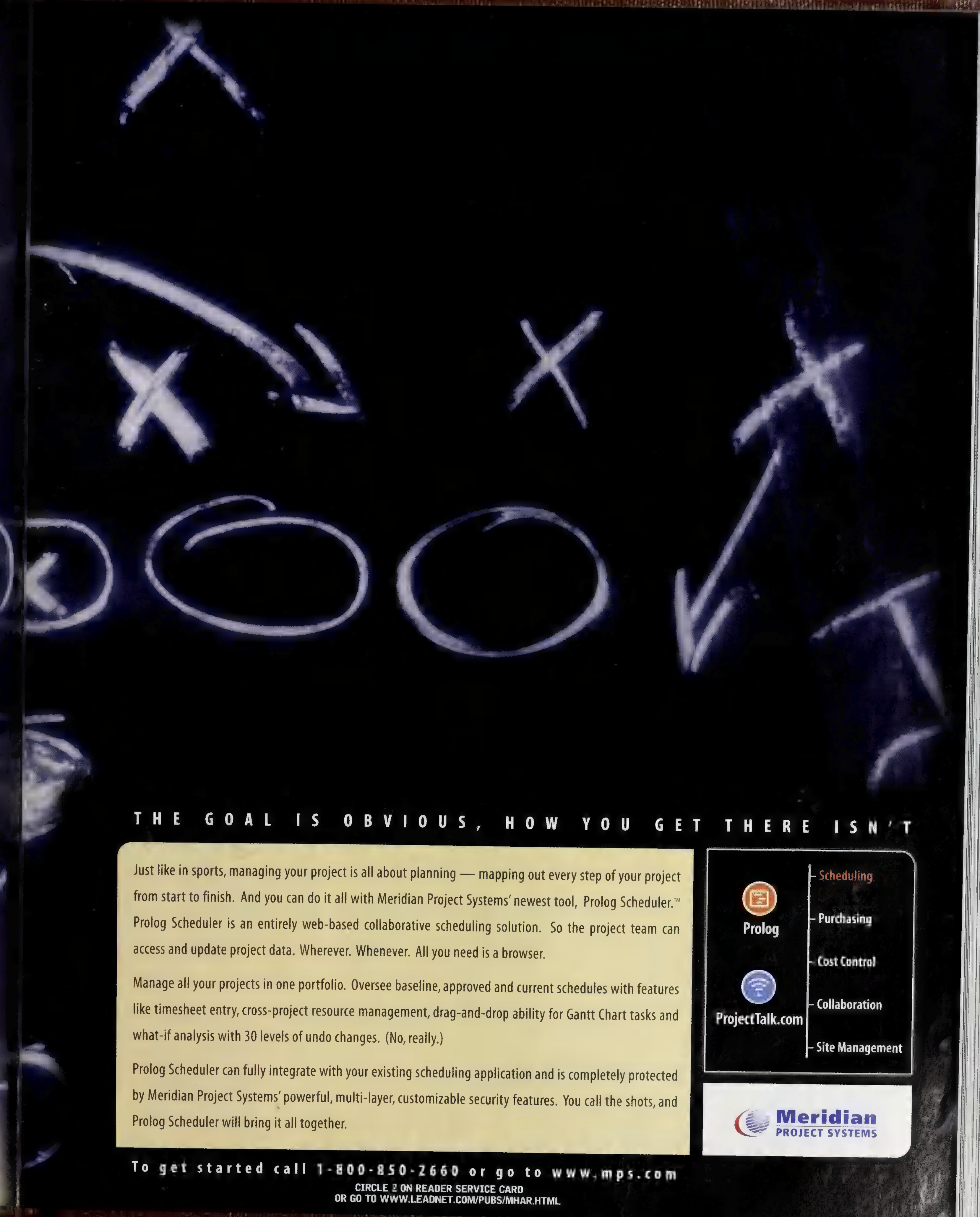

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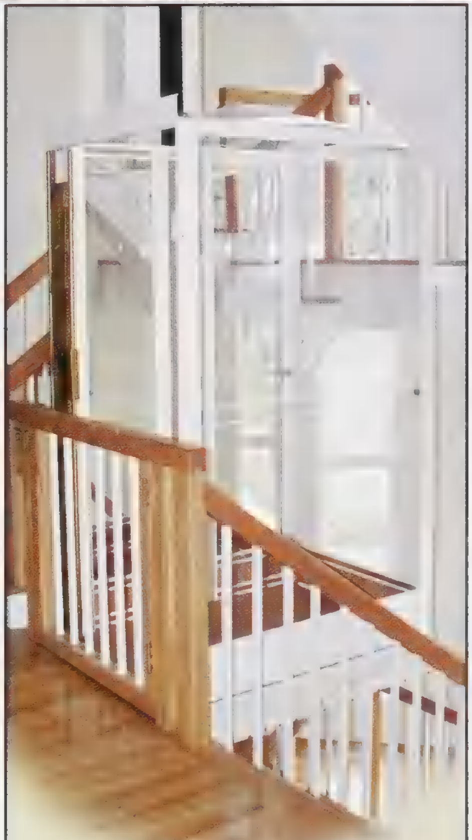

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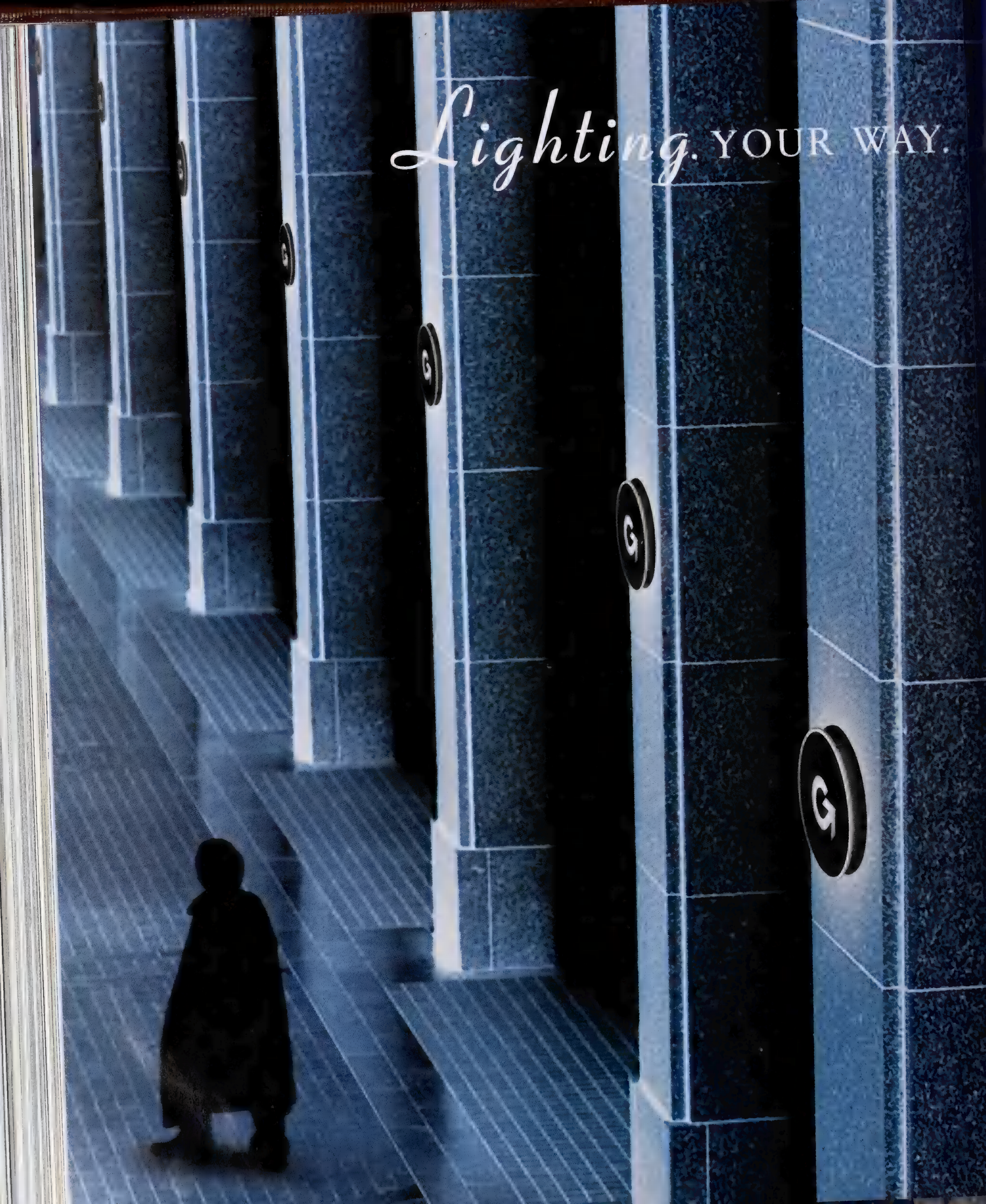
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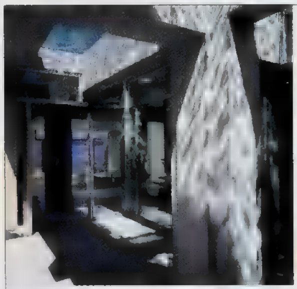

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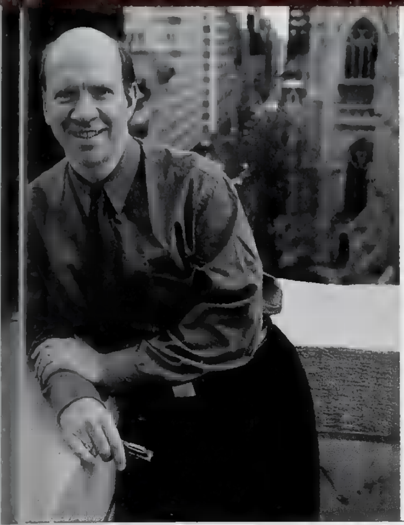

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The Security Paradox

Editorial

By Robert Ivy, FAIA

Think of where you feel most secure. Lying fully prone on a warm beach or snuggled in your own bed? Lost in swirling crowds during a lunchtime break or hiking in the high country? Few would answer, "Behind locked doors and high walls." As psychologist Richard Farson has observed, the term "security" is bound in paradox: Where security systems assert themselves most forcefully—in prisons, for example—fear, discomfort, and even danger often flourish; conversely, the absence of visible protection can promote the feeling of well-being.

In recent months, security by design has leaped from a single item on the architect's programmatic checklist to the headlines. Architects and other design professionals are engaging in a national debate, spawning a mini-industry of consultants, Web sites, and AIA conferences in their wake, to discuss safety and security for the built environment. If you take Farson's point, however, you quickly realize that security engages both fact (statistical reality) and perception, with design at the fulcrum, balancing the two.

When terrorism shattered our world, did facts dictate that all buildings become bunkers? Two building types illustrate the dilemma, with differing solutions. As Jane Loeffler, Ph.D., has written, embassies evolved, by policy, from projections of American culture (remember Edward D. Stone's embassy in India) to thick-walled, heavily protected, interior-oriented structures with little room for architectural involvement. Despite the Nairobi bombings and contemporary realpolitik, critics decry these fortresses, with their unintended negative connotations of America's image abroad.

By contrast, American courthouses, under the direction of the General Services Administration (GSA) and prompted by an ethos passionately articulated by former senator Daniel Patrick Moynihan, had begun to open up. In buildings from Las Vegas to Boston, we began to see symbols of justice that democratically engaged the city, opening a transparent, public face to the community, while sequestering judges chambers, juries, law enforcement, and defendants in more protected, private areas. Courtrooms became the mediating space between the two exposures. Can this openness continue?

In this murky time, risk assessment can help provide direction for decision making by architects. By isolating the types of potential threats and addressing each as a design dilemma, imaginative solutions can produce buildings that enhance our feelings of well-being while simultaneously providing protection. Our plans may change: As in the new GSA courthouses, layered zones may progressively increase in wall thickness, in material strength, and in active protective systems from public to private realms. Buildings at high risk for blast damage can offer greater setbacks, wall hardening, minimized adjacency, and mitigation of projectile damage, none of which need affect the public's appreciation of transparency or accessibility. It should be possible to appear open and be safe.

Make no mistake, the moment is dangerous. The list of potential security challenges can seem daunting—biohazard, theft, crowd control, arson, chemical attack. However, if we are able to determine which threats to address dispassionately, our solutions can become part of our overall design palette, much as we design for fire safety today. New products and systems may be invisible components of total building safety, similar to systems for fire suppression or thermal comfort. Speaking from his experience with airport design, architect Laurence Speck offered, "If it's designed in, it should be as natural as a stove in a kitchen."

ARCHITECTURAL RECORD wants to help. While this April issue includes the latest definition of "home," our most sacrosanct environment, we wanted to address the notion of security in other types of buildings and structures. Together with our sister publication, Engineering News Record, we offer a special publication, Building for a Secure Future, that addresses the security paradox, encouraging us to design buildings that are simultaneously transparent, welcoming, and safe. Do you feel secure where you are today?

Robert Ivy

t isn't seeing shadows in the light,

it's seeing light in the shadows.

Shashi Caan, Associate Partner, Skidmore, Owens & Merrill
On light, skyscrapers and sustainability:

"These buildings simply take your breath away, but it's the streets we walk on, the in-between places, the shadows and voids that really make the buildings soar. Seeing shadow allows us to experience light. And to experience what is made by man we must appreciate what the earth provides."

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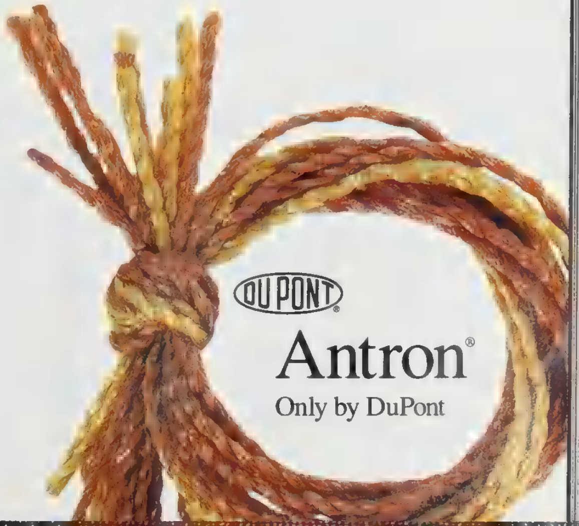

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Letters

Keeping a watchful eye

As an architect living in New York City and working throughout the Northeast, and a proponent for ecological methods of design, product selection, and construction, I feel obligated to bring the following issue to my colleagues' attention:

I recently watched an investigative show, *Bill Moyers Reports: Trading Democracy*, that examined NAFTA and, specifically, the gross mistreatment of a Mexican town by a Newport Beach, California, waste-management company called Metal-Clad.

In 1995, Metal-Clad purchased a hazardous-waste-water plant in the Mexican state of San Luis Potosi. Metal-Clad intended to clean up the site and expand the plant to handle hazardous waste from the U.S. During the licensing process, an environmental impact study revealed that the plant was situated directly above a local aquifer. The local government declared the area an ecological preserve. Metal-Clad was then unable to obtain government permits for expansion and subsequently left the property in a polluted state, thus ruining the only source of fresh water in the area. (Metal-Clad later sued the Mexican government under NAFTA's Chapter 11 and won $16.7 million.)

As members of arguably the world's most honest profession, I believe architects have a moral obligation as progressive thinkers to exercise control, and even to dictate which materials and products we should specify on our jobs and which ones we should prohibit. Though cost is certainly a factor in selection, there are always alternate manufacturers, and it wouldn't take that much extra research to determine if a company has participated in any unscrupulous behavior.

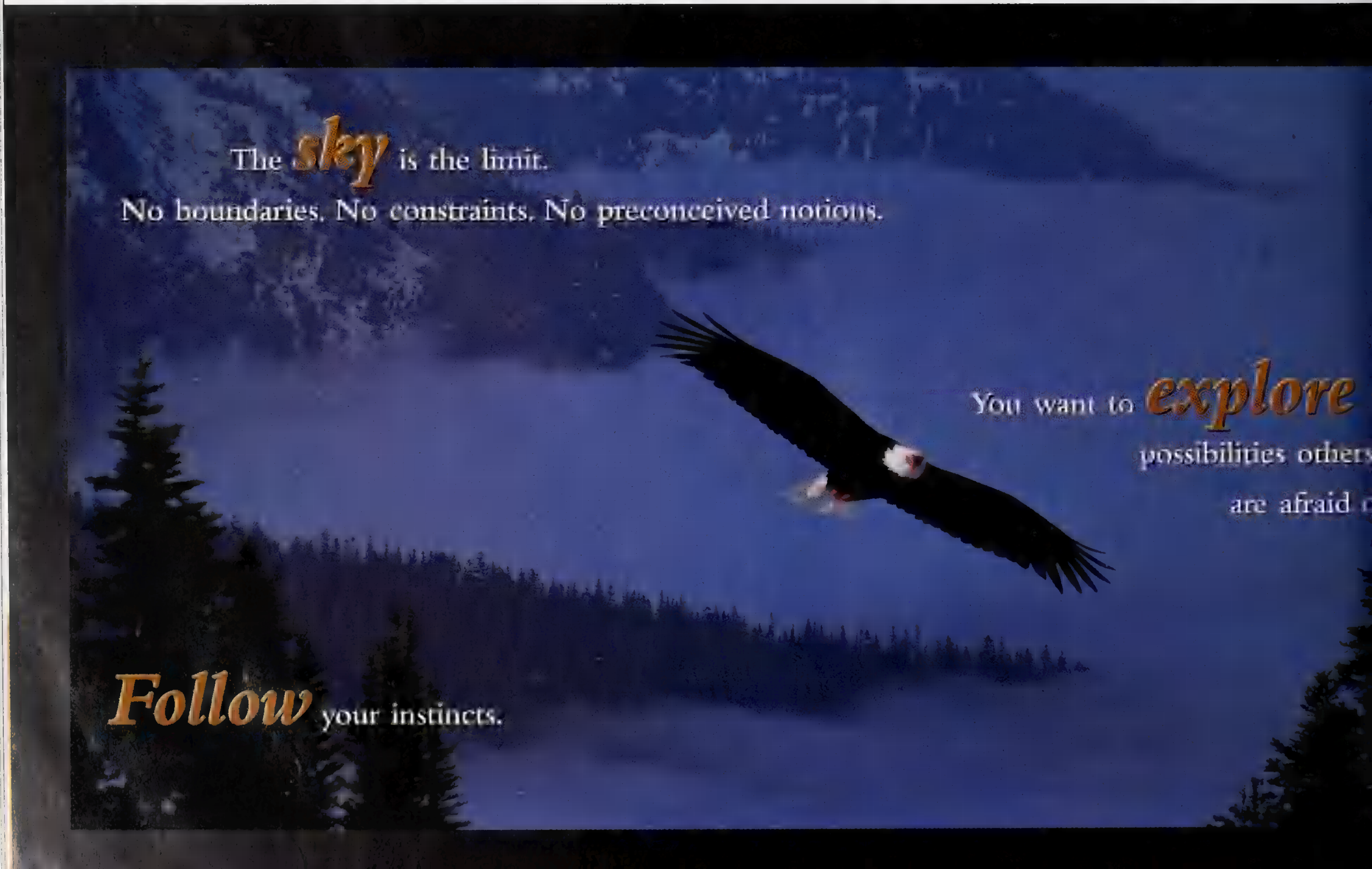
A smart consumer is an informed and powerful one. The ripple effect of exposing these types of ill-mannered companies will help to reinforce the positive and noble objectives that many of us in the field of architecture and the building industry aim to achieve.
— *Peter Gaito, Jr.*
New York, N.Y.

The silencing of the muse

Youngsters in the profession sure can't draw. The computer drawings that are generally produced look terrible and lack line weight, care, and concern. In the past, the young aspiring designer of such drawings would have been relegated to the spec department or to doing details in the back room.

I fear the Muse has lost her influence. She no longer has the human material to inspire and move her creations directly from mind to hand to paper. She no longer has the eye to get the color just right or to contemplate the penumbra of the shadow as it falls against the stone wall. The computer has simply gotten in the way, and a fundamental link has been broken.

When Frank Lloyd Wright used to shake the sketch out of his sleeve in a few hours to solidify and firm up the incubations and fermentations of his mind, the result was a wonder. When Louis Sullivan cre-



ated ornament as a germ seed of an idea, the result was earth moving. Of course, they were architects of the Beaux Arts age, when charettes seeking inspiration mattered.

There is an inexplicable something about the sketch coming from the hand of the master, with its resulting authority, that cannot be replaced by the account-executive business model so prevalent in the modern corporation. No amount of packaging, rendering, and graphic design replaces the inspiration of the sketch and all that it conveys.

I suspect we have lost something as we embrace our new computer technology. It seems the creative spark is dimming in the profession. It seems cold-minded accounting, efficiency, and packaging presented by account executives focusing on the client relationship is becoming ascendant. While it is encouraging to see the National AIA Convention 2002 offer remedial drawing classes that integrate xerox, camera, and the computer—I fear they don't get it, and the Muse is becoming silenced.

—Craig Purcell
Island Architecture
Bainbridge Island, Wash.

Rebirth with the arts

I would suggest that within considerations for development of the former site of the World Trade Center, strong thought be given to the inclusion of arts facilities as part of any rebuilding effort. The positive and meaningful expressions of dance, theater, music, visual arts, and the spoken word are reflective of the most hopeful aspirations of the human spirit and stand in stark contrast to the hateful destruction of life and property caused by the attacks on the twin towers.

The arts could serve an important function in revitalizing New York City's devastated downtown, bringing life and business into the area even after business hours, making the landmark tip of Manhattan so much more than just the canyon of commerce. A facility on the model of the Barbican Center in London, housing theaters, galleries, shops, and restaurants, would be an appropriate living memorial to all that was lost in the attacks and could provide a centerpiece of creative energy at the very heart of downtown. It would bring with it not only the cultural excitement for which this city is known worldwide but ample employment opportunities, as well. Such a facility could house or be built around a permanent memorial to the victims and stand as powerful testimony to the many free and distinct voices that make up our great city. An interdenominational chapel for reflective prayer could be included, highlighting the importance of tolerance among people of all faiths—thus merging at the site the beneficent energies of religious faith and creative expression in the humanistic spirit of the Italian Renaissance.

The generous power of artistic endeavor has long been a vital strand in the fabric of our urban life, playing both an important economic role and contributing so much to the sense of what it means to be a New Yorker. The arts very much deserve recognition and inclusion in the effort to heal the psychic as well as the physical wounds of 9/11. There has been discussion of what to do with aging Lincoln Center. This is the time to bring it downtown, and to let every joyous note, song, and step prove our devotion to our common humanity, to mark all that has been lost, and to celebrate all that remains.

—Julian Jackson
Metaphor Contemporary Art
Via e-mail

Corrections

Photographer Derek Lepper's name was misspelled in the March issue's story on the Coal Harbour Community Center [page 124]. In the December 2001 issue's Design Vanguard section [page 76], the Day Care/Youth Center in West Berlin was designed by Barkow Leibinger Architekten with Douglas Gauthier as a principal collaborator.

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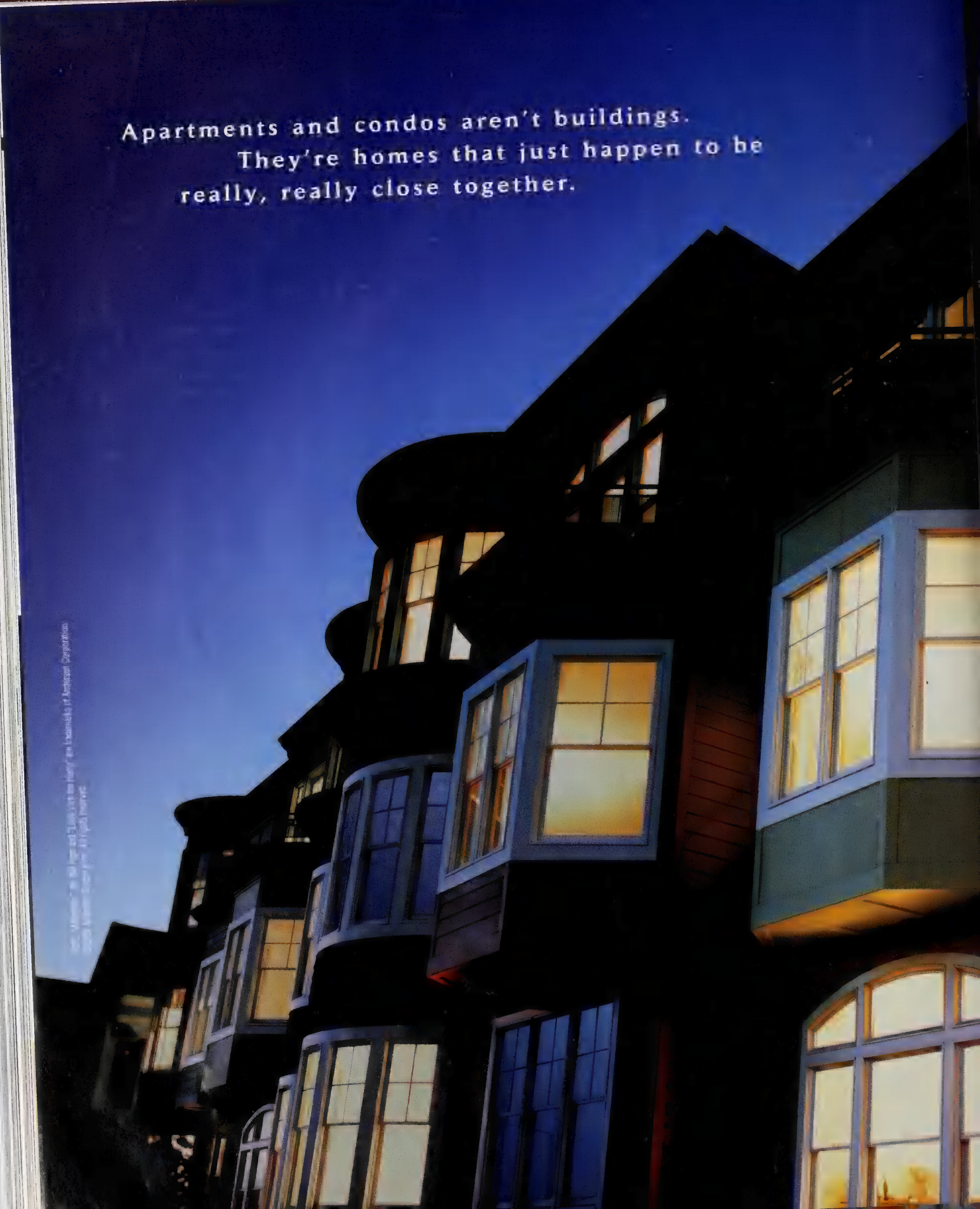
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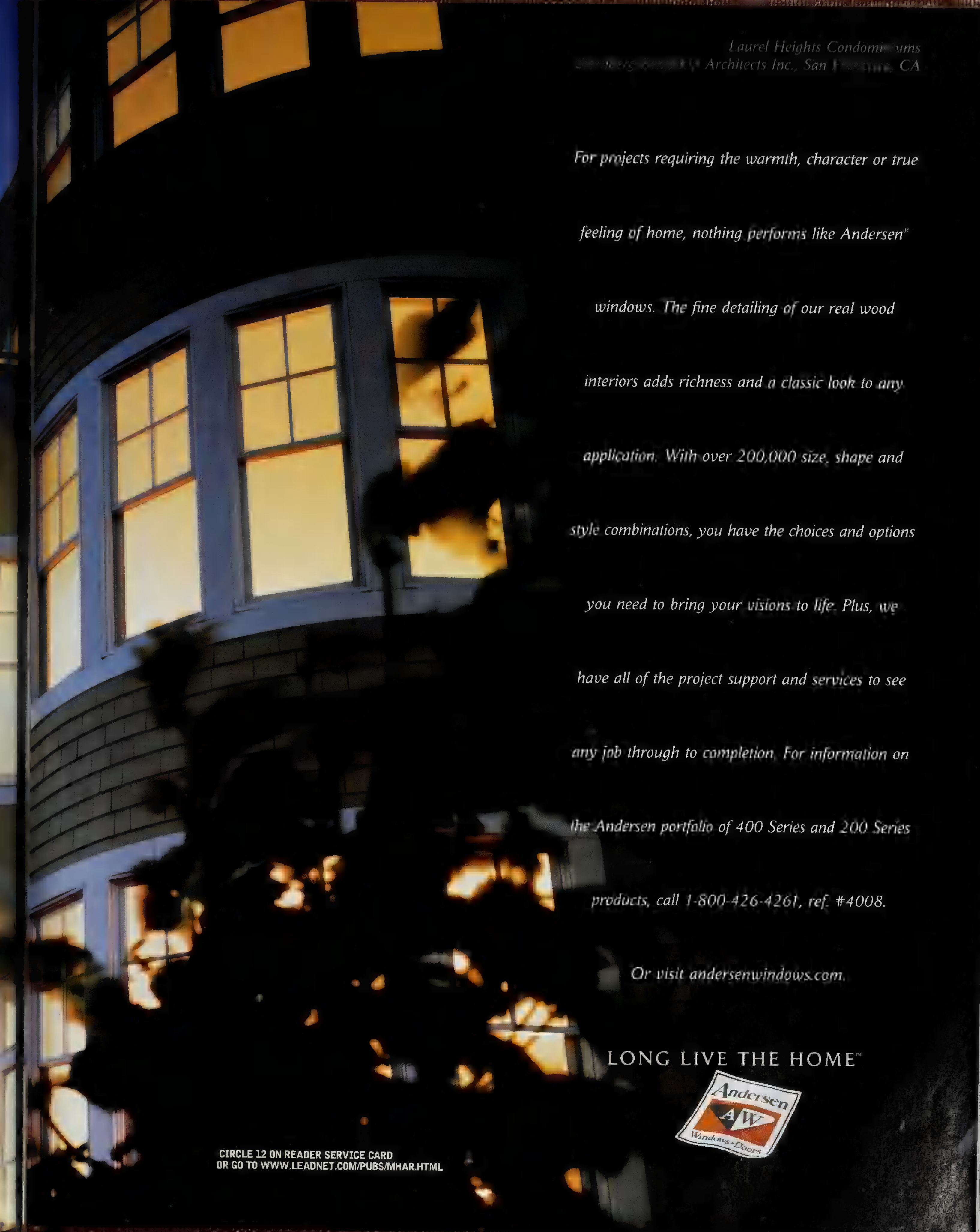

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Record News

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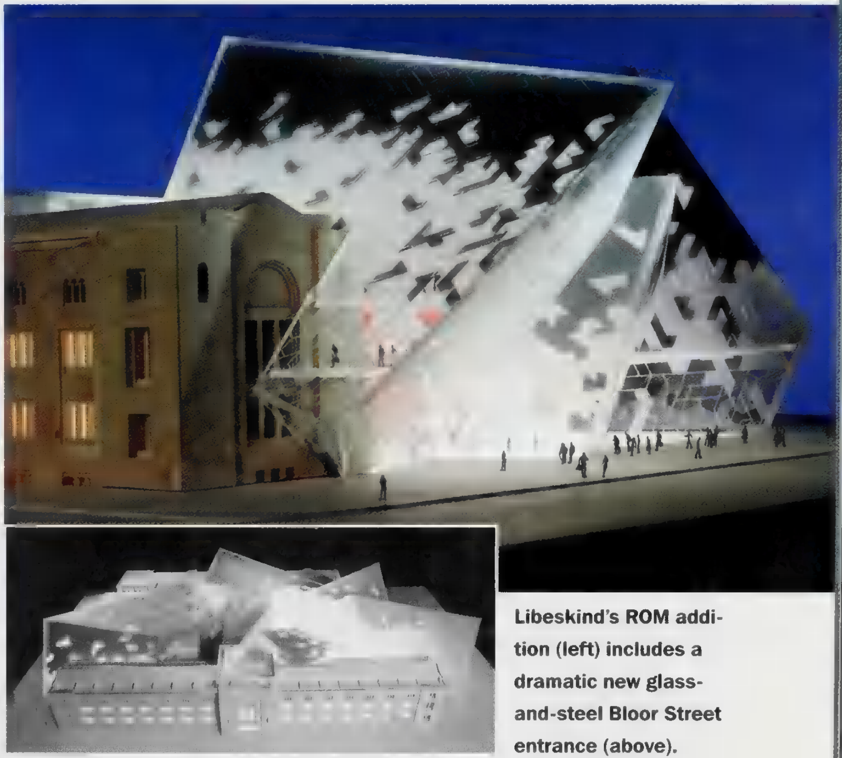
Libeskind riles up Canadians with Royal Ontario Museum win



Libeskind's ROM addition (left) includes a dramatic new glass-and-steel Bloor Street entrance (above).

The Royal Ontario Museum (ROM) in Toronto selected Daniel Libeskind in late February for its $130 million expansion, and the choice quickly created controversy.

Libeskind's design, with dramatic angular forms, is in sharp contrast to the ROM's existing building and the surrounding context. The ROM's expressed intent—to commission a building that would establish the fifth largest museum in North America, and Canada's largest, as a star attraction in the international architecture scene—struck at the heart of Toronto's ambivalence about its future as a world-class city. Just as its loss of the 2008 summer Olympics to Beijing was met with as much relief as disappointment, Toronto greeted Libeskind's bold architectural gestures with decidedly mixed feelings. But one newspaper headline blared, "Godzilla Looms Over ROM."

The design, which will be refined with Toronto firm Bregman + Hamann Architects, will include substantial renovation of the museum's existing facility. The 40,000-square-foot addition will include gallery space, studios, offices, restaurants and retail, a reference library, and two theaters. Libeskind's plan shifts the ROM's main entrance from Queen's Park, Toronto's grand ceremonial thoroughfare, to Bloor Street, a bustling commercial avenue.

Entries by Bing Thom (left) and Andrea Bruno (right).

Libeskind won the competition against two finalists, Architetto Andrea Bruno of Turin, Italy, and Bing Thom Architects of Vancouver. The ROM initially invited 12 architectural firms to submit formal proposals for the museum's expansion, including Jean Nouvel, Cesar Pelli and Associates with Adamson Associates Architects, Foster and Partners, Kohn Pedersen Fox and Associates, Michael Hopkins and Partners, Polshek Partnership, Rafael Viñoly Architects, Skidmore, Owings & Merrill, and Tod William Billie Tsien and Associates.

Andrew Blum

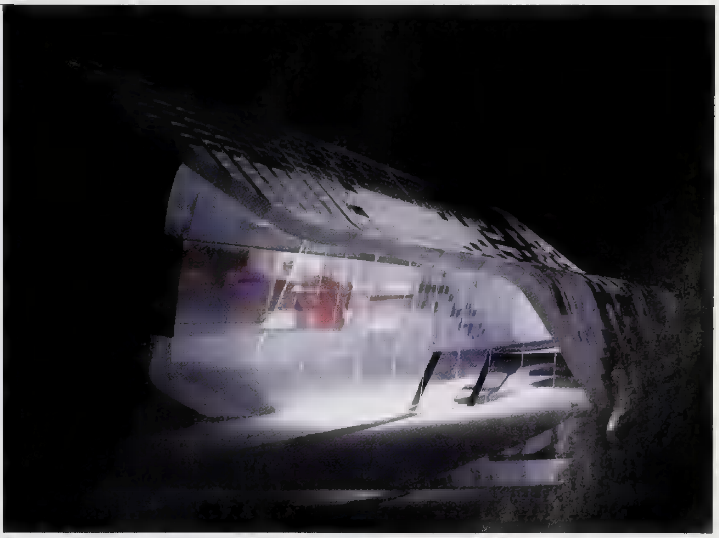
Hadid designs temporary Tokyo Guggenheim

The Guggenheim Museum, which is expanding worldwide but is uncertain about its planned lower Manhattan museum by Frank Gehry, has commissioned Zaha Hadid Architects to design a temporary Tokyo museum.

Hadid's design for a 1,250-square-foot gallery on Odasiba Island is a large, single space wrapped in a snakeskinlike enclosure clad in ceramic tiles. Photovoltaic cells, light boxes, and a large media screen are embedded in the exterior. The building is planned as a 10-year contemporary art museum. Hadid was one of three architects, including Jean Nouvel and Shigeru Ban, considered by the Guggenheim for the job.

The Guggenheim has announced that it will develop a facility in Rio de Janeiro. But the fate of the lower Manhattan museum, which was going to rise on the East River shore, is unclear. Early last year, the city pledged to fund about 10 percent of the museum cost, but no announcement has been made in the aftermath of September 11.

John E. Czarnecki, Assoc. AIA



Hadid's Tokyo Guggenheim is a room wrapped in a snakeskinlike enclosure.

PHOTOGRAPHY: COURTESY ROM (TOP FOUR), COURTESY THE ARCHITECT (BELOW)

OFF THE RECORD

Structural engineer Leslie E. Robertson, P.E. will receive the first Henry C. Turner Prize for innovation in construction technology in a ceremony at the National Building Museum on May 6. The prize, which includes $25,000 cash, is named after the founder of the Turner Construction Company.

Frank Gehry, FAIA may be close to getting his first major project in his hometown of Toronto. Gehry has been in discussions with the Art Gallery of Ontario regarding a $170 million expansion for the downtown museum.

Preservationists in Chicago are in an uproar that the city has issued a demolition permit for the building that once housed the Chicago Mercantile Exchange. The 17-story 1927 building is slated to be torn down after tenants vacate this month. In 1996, the building was listed by the Chicago planning department as historically significant, but it was not granted official landmark status.

Harry Wolf, FAIA, and his Malibu, California–based firm Wolf Architecture will design a new federal courthouse in Mobile, Alabama. The $70 million building is part of the GSA's Design Excellence program.

Robert A.M. Stern Architects is designing a 36-story office tower, called Torre Almirante, in Rio de Janeiro for American developer Hines, to be completed in 2004. Stern was also selected as design architect for a new $100 million federal courthouse in Richmond that is scheduled to open in 2007.

Lord Norman Foster has won an international competition for a waterfront arts and entertainment complex in Hong Kong that will include theaters, concert halls, an art museum, cinemas, shops, and restaurants. The development will be built on 100 acres of reclaimed land.

Chong on the AIA's national conversation

At the American Institute of Architects (AIA) Grassroots Leadership Conference, AIA leaders initiated what they called a "national conversation" about a wide range of issues relevant to architects today. AIA President Gordon H. Chong, FAIA, President-elect Thom Penney, FAIA, and Norman Koonce, FAIA, EVP/CEO of the AIA, introduced the conversation's broad themes in a video discussion (the video is available to all AIA components). They then asked component leaders to have a dialogue about the issues at the local level before the AIA Convention in May. Some of the topics are: "How do we accommodate the rapid pace of change?"; "How do we build collaboration across the building industry?"; and "How do we begin to frame our role in creating livable communities?" RECORD news editor John Czarnecki spoke with Chong about his intentions for the national conversation.

ARCHITECTURAL RECORD: *How was the vision for the national conversation initiated?*

CHONG: The national conversation is the latest in a continuum of efforts to engage AIA members in thinking about the future of the profession. This is not a stand-alone effort: The AIA began analyzing trends affecting the future of the profession in 1994 with an initiative called The Redefinition of the Profession.

RECORD: *In general terms, what do you hope to accomplish through this conversation and member feedback?*

CHONG: The primary goal is to encourage members to simply engage in a dialogue about the future. The process of engagement is almost more important than finding "the single right answer."

RECORD: *How do you believe this conversation will impact the institute and the profession in the next year? Or in the next 10 years?*

CHONG: The short-term issues may receive responses in 2003, while the responses on the more complex issues of the future will direct the additional types of research and information needed by the academy (education) and practice. We have already been increasingly sharing, collaborating, and integrating our efforts with the collateral organizations.

RECORD: *The conversation topics are rather wide-ranging and all-encompassing, from documents to livable communities to expanded services. Why? Are there any topics that deserve greater focus?*

CHONG: Diverse practice settings are of increasing complexity, with no limit to the number of issues that we can and need to address. However, it is not anticipated that the national component of the AIA will address all of them. Some are better addressed at the local level, and others in collaboration with collaterals and other industry partners. We hope to undertake "pilot projects" as a methodology of testing change, experiential learning, and risk taking. Perhaps more important than identifying areas deserving greater focus is seeing integration of opportunities.

RECORD: *Can you point to an example of how the changing role and responsibility of the architect is impacting how the AIA operates?*

CHONG: The AIA's leadership in developing the content of contract documents is critical to building the confidence and trust of our clients and contractors through clarity of expectations. By increasing client and public confidence as "trusted advisors," the architects who have broad skills as trusted advisors will be called upon for input to enhancing the livability of our cities.

RECORD: *One of the topics is "How do we develop a culture of sharing?" Why should a culture of sharing be a topic of concern for architects today?*

CHONG: The need to develop a knowledge-based profession is one of the AIA's three primary AIM implementation strategies. The AIA board is discussing an approach to defining a "knowledge agenda" that includes three concurrent efforts: 1) a member-derived, practice-based sharing of "best practices"; 2) a more rigorous, applied-research program that we have launched on issues that serve a greater societal concern; 3) the aggregation of "practice-based" (as opposed to design-based) information that can be shared.

RECORD: *Once the information is gathered, how will the AIA proceed with it?*

CHONG: We intentionally identified many discussion issues without prioritizing or prejudging whether or not these were the most important issues. The member perspectives will shape the focus for programs in 2003 and beyond.

AIA reports to be on healthy ground

Norman Koonce, FAIA, EVP/CEO of the American Institute of Architects (AIA), told the chapter leaders gathered for the AIA Grassroots Leadership Conference on March 1 that the institute's financial health was steadily on a positive track. The AIA's actual 2001 net income of $2.85 million nearly doubled the amount that was budgeted—$1.446 million. Treasurer Douglas L. Steidl, FAIA, noted that the AIA will now plan to achieve total net assets of $2.5 million in 2002, one year ahead of schedule. "It's been a tough track for the past two years, and will be in 2002," Steidl said. "We're now optimistic about the future." In addition, the AIA now reports approximately 72,000 members, the most in the organization's history. ***J.E.C.***

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OFF THE RECORD

Rafael Viñoly has been commissioned for the Howard Hughes Medical Institute's biotechnology research center in Loudon County, Virginia. The $500 million, 750,000-square-foot complex will likely open in 2005.

The Modern Art Museum of Fort Worth building by Tadao Ando will open to the public on December 14.

Skidmore, Owings & Merrill has been hired to design a new U.S. Patent and Trademark Office in Washington, D.C. Scheduled for completion in June 2005, the project consists of five office buildings totaling 2.6 million square feet, two parking garages totaling 1.3 million square feet, and two townhouse and office buildings.

The Royal Australian Institute of Architects (RAIA) has selected Brit Andresen as the recipient of its 2002 Gold Medal. Andresen is the first woman to win the award. No woman has ever won the AIA Gold Medal.

A shortlist has been announced for a new $85 million central library for Birmingham, England: Edward Culligan Architects, Future Systems, Michael Hopkins and Partners, Richard Rogers Partnership, Wilkinson Eyre Architects, Moshe Safdie and Associates, and Snøhetta. A winner will be named in April, and the library is expected to open in 2007.

Denver-based Fentress Bradburn Architects has won a competition to design the $80 million National Museum of the Marine Corps in Quantico, Virginia.

Southern California architects Lawrence Scarpa, AIA, and Angela Brook, AIA, of Pugh + Scarpa have cofounded a new nonprofit, affordable-housing development organization, Livable Places. They've received nearly $1 million in grants from Fannie Mae, banks, and foundations.

Piano's Morgan addition approved

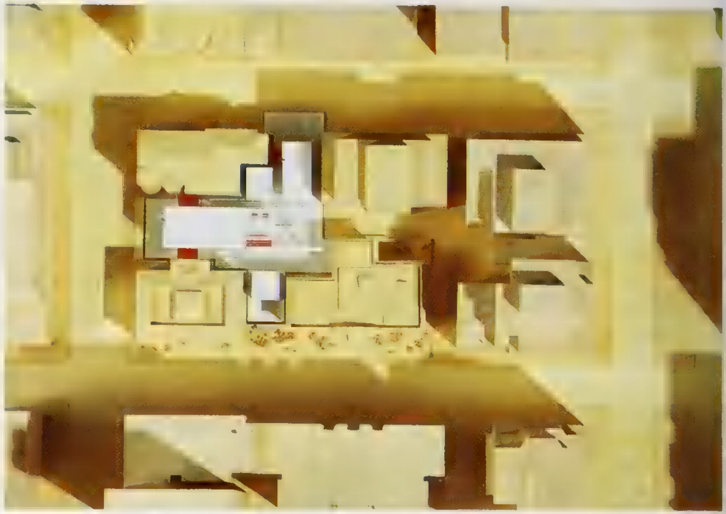
New York City's Landmarks Preservation Commission approved a $75 million expansion to the Morgan Library by Renzo Piano Building Workshop with the New York firm Beyer Blinder Belle. The Morgan expansion will add more than 69,000 square feet to the museum and research center. Its campus, located on Madison Avenue between 36th and 37th Streets, now comprises the original 1906 library designed by Charles McKim for John Pierpont Morgan, its annex, and the Morgan House.

A majority of the expansion will occur out of sight: An auditorium and storage space will be located in a four-story vault carved into the bedrock beneath the site. Above grade, three glass-and-steel pavilions will be interspersed among the existing buildings. A new entrance pavilion, with reading room and gallery, will move the Morgan Library's public face from 36th Street to Madison Avenue. It will open to an inner courtyard that necessitates the demolition of an atrium by Voorsanger and Mills. Between the original library and annex, a 20-by-20-foot steel cube will house special exhibitions. Another four-story structure will replace a small office building.

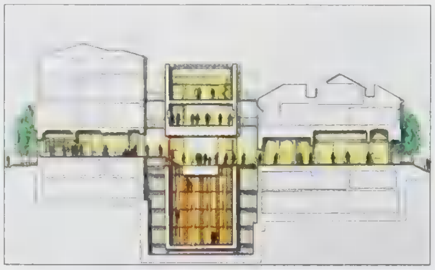
The excavation allows the new buildings to correspond to their predecessors' scale. Morgan director Charles Pierce says, "We wanted the architectural solution to be modern in approach, but to fit in and integrate itself as best as possible with the three existing buildings."

Architect Sherida Paulsen, chair of the city's Landmarks Preservation Commission, adds that the Piano structures "are not monolithic at all" and "provide a very beautiful setting for the three incredible [original] jewels."

Pending approval from the city's Board of Standards and Appeals, construction will begin in 2003, with completion expected in 2005. *David Sokol*



The Renzo Piano addition will be inserted between existing Morgan Library buildings (above) with four undergound floors for storage (below).



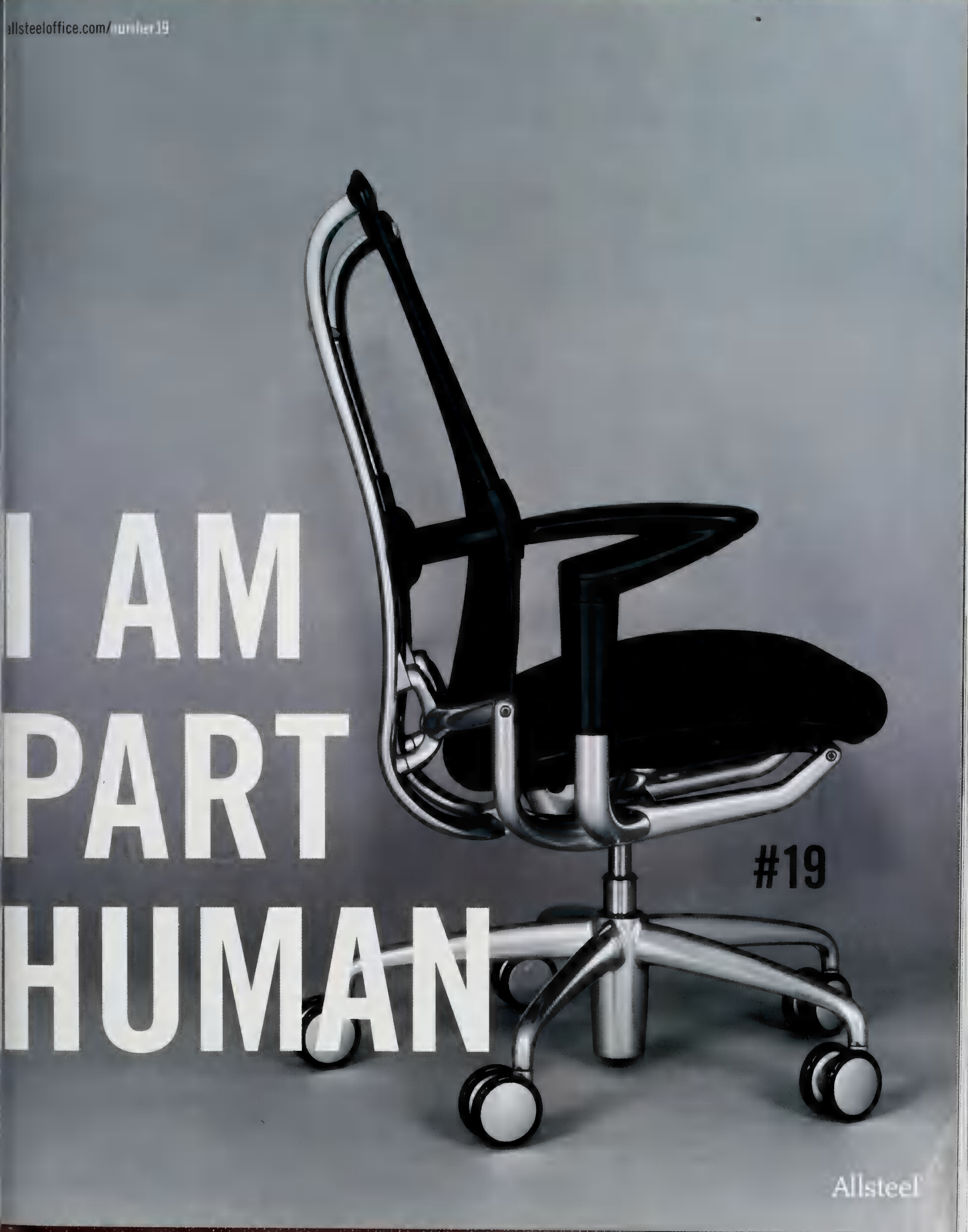
Green building plan to affect $1.2 billion in L.A. college construction

The Los Angeles Community College District (LACCD) board of trustees adopted a sustainable building plan in early March to incorporate energy-saving and environmentally friendly features into its new structures. A year ago, Los Angeles voters approved the $1.2 billion Proposition A bond measure that will fund new construction and renovation at each of the nine campuses of LACCD, the largest community college district in the country, with more than 120,000 students enrolled annually. Some 50 to 60 new LACCD buildings are planned over the next decade.

Under the sustainable building plan, new structures with more than 7,500 square feet and that are more than 50 percent funded by Proposition A would be required to incorporate green building practices advocated by the U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) certification program.

LACCD's board of trustees worked with the local community and environmental organizations like the Sierra Club and Global Green as they developed their plan. "Given the size and complexity of [LACCD's] building program, we felt we needed to adopt a well-defined process for meeting our sustainability goals. We wanted to be both environmentally protective and fiscally responsible," LACCD chancellor Mark Drummond told RECORD.

Implementing LEED-certified standards for its new buildings will add an estimated $3 to $5 million in construction costs for each of the nine campuses. Some of these costs will be offset by rebates, incentives, and long-term savings due to conservation of energy and water. Construction management firm DMJMH+N is overseeing LACCD's construction program. The colleges are now engaged in planning and design work. Leo A. Daly, Gensler, and Sasaki Associates are among eight firms developing master plans for the district. ***Deborah Snoonian, P.E.***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SPECIAL REPORT

New York remembers with two temporary memorials

As discussions are taking place regarding an appropriate permanent memorial to the World Trade Center disaster, two temporary memorials to the event were unveiled on March 11.

The 1971 Fritz Koenig sculpture *The Sphere*, which originally stood in the World Trade Center plaza, was recycled as a memorial sculpture and unveiled in Battery Bark. The 15-foot-tall, 45,000-pound steel and bronze sculpture sustained a gash in its center on September 11 but remained structurally intact [March 2002, page 28]. Koenig had created the sculpture as a monument to peace through world trade.

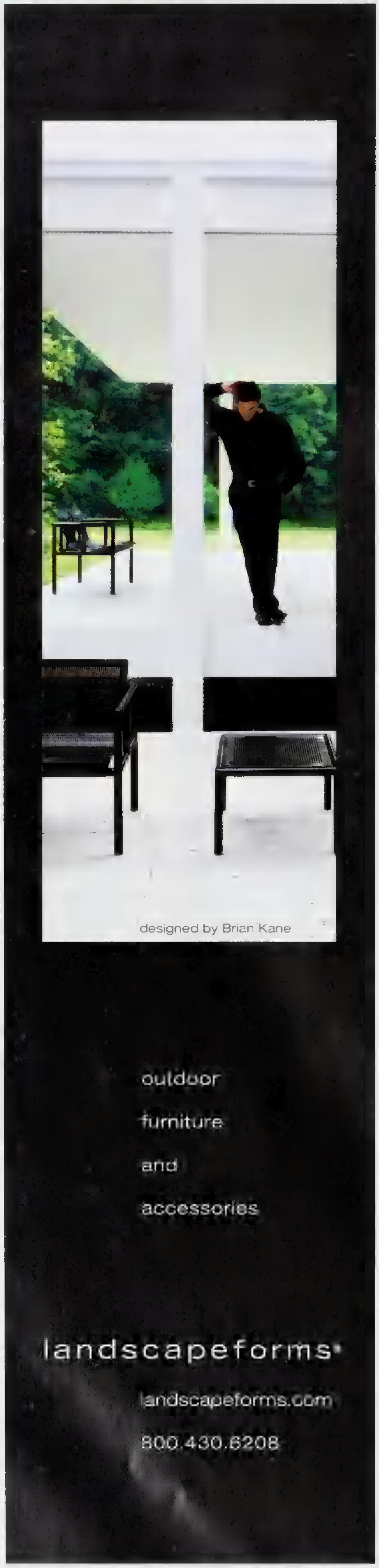
At dusk on March 11, the Tribute in Light memorial, composed essentially of two parallel beams, was projected into the sky (to continue for the next 32 nights) from a site a few blocks north of Ground Zero. To be implemented, the beams required a total of 88 fixtures, 44 for each. Lit from dusk until 11 P.M., the tribute was conceived by a creative team including John Bennett, Gustavo Bonevardi, Richard Nash Gould, Julian Laverdiere, Paul Marantz, and Paul Myoda. The Municipal Art Society of New York helped to organize the memorial, with artistic support from Creative Time.

Financial support for the Tribute in Light was provided by General Electric, Deutsche Bank, and AOL/Time Warner, and Con Edison was a contributing sponsor.

The Sphere was dedicated March 11 as a memorial in Battery Park.

The blue beams of Tribute in Light shine just north of Ground Zero (bright glow in right of photo).

At its Grassroots Leadership Conference, the American Institute of Architects (AIA) honored the New York chapter's response to the terrorist attack. AIA New York, under the leadership of president-elect George Miller, FAIA, past president Margaret Helfand, FAIA, president Leevi Kiil, AIA, and executive director Rick Bell, FAIA, has been instrumental in organizing the region's design community to respond to the September 11 disaster. The chapter has also co-sponsored the World Trade Memorial Fund with the New York Building Congress. AIA president Gordon H. Chong, FAIA, presented the chapter leadership a citation that read, in part, "Out of the ashes of a great tragedy, they have given voice to the hopes and concerns of all of us and brought together the energy and vision of the design professions and community leaders to honor the memory of those struck down, by fostering bold and still unfolding acts of creativity." *J.E.C.*



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SPECIAL REPORT

Planning moves quickly on 7 WTC and other components

Sources close to the planning for 7 World Trade Center and the remainder of the World Trade Center site told RECORD at press time in late March that plans were moving forward with 7 WTC, and construction may begin in June. General planning for the remainder of the WTC site may be made public by April.

As RECORD has previously reported [February 2002, page 28], developer Larry Silverstein has selected Skidmore, Owings & Merrill (SOM), with David Childs, FAIA, as design principal, to design a new 7 WTC, which would be built in the same location as the previous 7 WTC and include a new Con Edison substation. Sources reveal that plans for 7 WTC call for a 1.6 million-square-foot building about 700 feet tall. The previous 7 WTC, which was destroyed on September 11, had 1.9 million square feet and was 615 feet tall. The smaller square footage is a result of allowing Greenwich Street to continue south of Barclay to Vesey Street. (The previous 7 WTC blocked Greenwich Street from the rest of the WTC site.) The size also reflects the maximum number of elevators, which is about 30, that can be placed in the building's floor plate while allowing room for Con Edison substation machinery. The 7 WTC lobby will sit at ground level facing the new block of Greenwich Street on the east side of the building.

Sources report that John C. Whitehead, chair of the Lower Manhattan Development Corporation (LMDC), is eager to begin construction of 7 WTC in order to activate the Con Edison substation. Once the structure for the building is in place, the Con Edison machines, weighing about 250,000 pounds each, can be installed on the ground floor of the north and south sides of 7 WTC. The Con Edison substation's power output will be necessary for the demands of summer heat and to service the upcoming construction in the area.

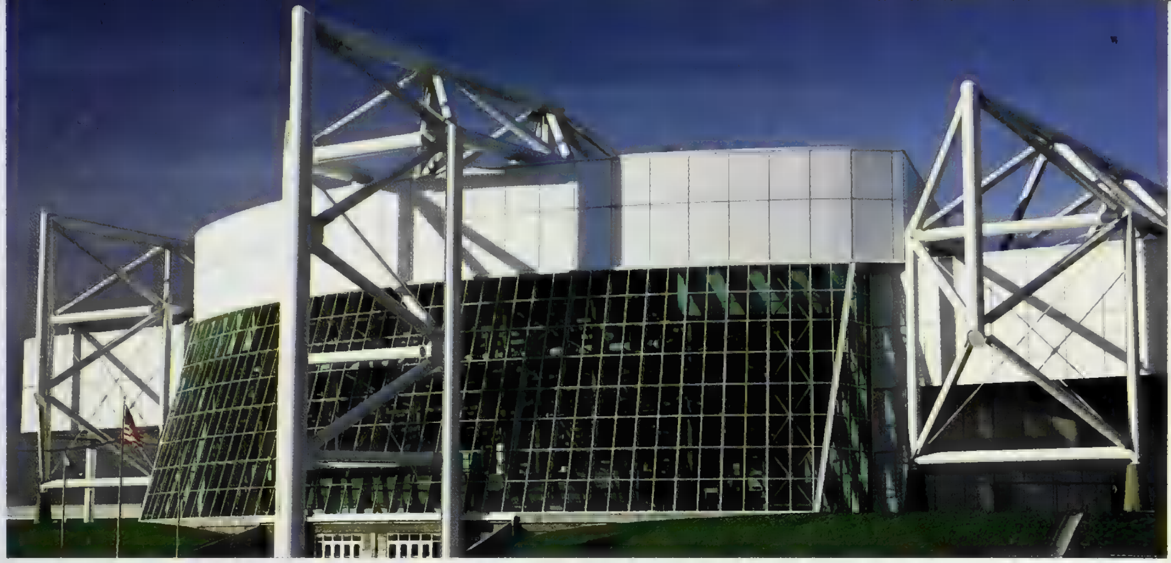
SOM is advising developer Larry Silverstein for the entire WTC site, but architects have not been named for the rest of the development. Alexander Garvin, appointed in February as the vice president of planning, design, and development for the LMDC, has since worked closely with Silverstein and SOM. Garvin is a member of the city planning commission, an adjunct professor of urban planning and management at Yale University, and the planning director for NYC2012, the nonprofit group coordinated to bring the Olympics to New York in 2012. Two of Garvin's former Yale students work for him with LMDC: Andrew Winters, a 1994 graduate of the Yale School of Architecture, is director of design and development; Christopher Glaisek, a 1996 graduate, is director of planning.

Marilyn Jordan Taylor, FAIA, chair of SOM, and urban designer Ken Greenberg of Toronto are leading a team that will develop a comprehensive plan by summer for the East River waterfront of lower Manhattan. The study, although outside the WTC site, will suggest connections to the new development at that location. *J.E.C.*

Looking north at Ground Zero, toward the site of 7 WTC, on March 7.

PHOTOGRAPHY: © AP PHOTO/ED BAILEY

WWW For continuous updates on the aftermath of the September 11 attack, visit our special section at: ***www.architecturalrecord.com***



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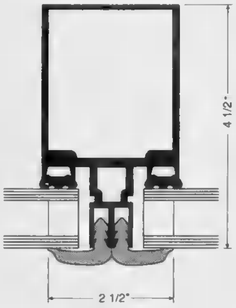

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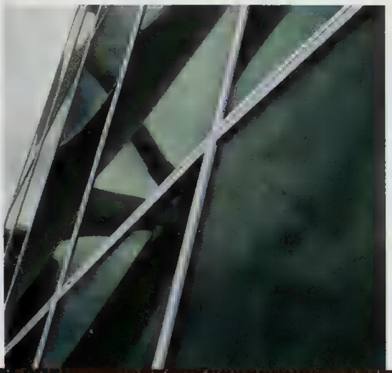

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County executive wants to replace his Paul Rudolph building

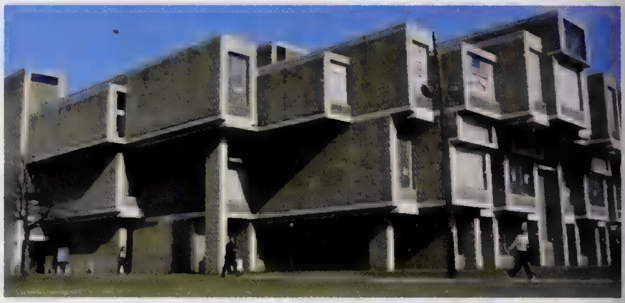
The county executive of Orange County, New York, has raised the ire of architects and preservationists by proposing to tear down Paul Rudolph's Orange County Government Center in Goshen, New York, a sleepy town of 5,676 about 25 miles north of the New Jersey border.

The Brutalist building, completed in 1971, is considered an important example of Rudolph's (1918–97) civic design. Noted for its intermingled and daringly varied spaces, the Orange County building was constructed with exposed reinforced concrete and brick.

In his March 7 State of the County address, newly elected Orange County executive Edward Diana announced that he wants to replace the Rudolph building with a new 50,000- to 60,000-square-foot building. A final decision on the building's future will be made in a few months, he says. "If you asked the people in this village, they would say you couldn't tear it down fast enough," Diana told RECORD.

Diana contends Rudolph's design not only is contextually inappropriate (the town is dominated by brick buildings and small farmhouses) but also aesthetically unpleasing, too difficult to maintain, and lacking space efficiency. He claims the cost to heat, air-condition, and renovate it would be $12 to $15 million over the next two to three years.

Many architects and preservationists, however, contend that the building must be saved. "Gothic Cathedrals are a bit drafty. It doesn't mean we tear them down," says Robert A.M. Stern, FAIA, dean of the Yale School of Architecture, which is in one of Rudolph's seminal buildings. "Something by one of the 20th century's more important architects should be kept in principle."



The Orange County Government Center by Paul Rudolph.

"Paul Rudolph has always been an architect who generated a great deal of passion from both sides: Either you love him or you hate him," says Scott Heyl, president of the Preservation League of New York. The league will consider the building's case, although most landmarked buildings are at least 50 years old. *Sam Lubell*

Army Corps chief resigns after five months

Michael Parker

After openly disagreeing with the Bush administration's proposed budget cuts for his department, Michael Parker, the civilian head of the Army Corps of Engineers, was forced to resign on March 6, only five months after being appointed. Parker's resignation brings to a head a perennial debate about the future of the Corps, which is often criticized for wasting money and harming the environment.

Parker asked for a 40 percent increase in the Corps funding, but President Bush's budget proposed a 10 percent decrease. A former House member from Mississippi, Parker was a vocal proponent of such traditional Corps activities as flood control, port dredging, and beach replenishment. He was also opposed to wetlands rules. Scott Faber of Environmental Defense told *The Washington Post* that the resignation "is one of the best things that's happened for the environment since God separated the heavens from the earth."

The Army Corps of Engineers is administered by the Pentagon but employs more than 30,000 civilians. The Corps has a long history of disagreements with presidents, but it has enjoyed very strong support from Congress because its construction projects spread billions of dollars among local economies. The Corps also has an impact on private construction projects, most importantly through rules regarding whether wetlands can be drained or filled to make them suitable for construction.

The day before Parker resigned, senators Robert C. Smith (R-N.H.), John McCain (R-Ariz.), and Russell Feingold (D-Wis.) introduced a bill to reform the Corps. A March 18 *New York Times* editorial called for wide reforms for the Corps in general. *Kevin Lerner*

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Nouvel selected for Carnegie Science Center in Pittsburgh

After a lengthy and sometimes contentious competition, the Carnegie Science Center in Pittsburgh announced in mid-March that Jean Nouvel was selected to design its $90 million addition. The 160,000-square-foot expansion to a 12-year-old building by Tasso Katselas Associates will cantilever 80 feet over the Ohio River near the confluence with the Allegheny and Monongahela rivers. The Nouvel building will be part of a development that will include a 3.5-acre water park on the science center's 13-acre site.

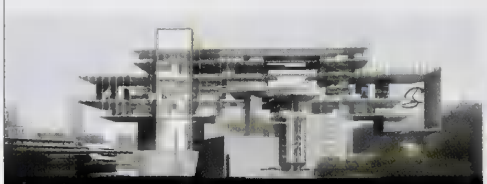
The Carnegie Science Center invited five architects to compete for the commission in fall 2000: Nouvel, Ben van Berkel and Caroline Bos of UN Studio, Daniel Libeskind, Peter Eisenman, and Bernard Tschumi. After the architects submitted their design proposals [January 2001, page 32], Nouvel, UN Studio, and Libeskind were given additional time and funding for revisions. Because they did not receive notification of either the ad hoc second round nor of their elimination, Tschumi and Eisenman withdrew in protest [March 2001, page 30]. The remaining three architects underwent a lengthy review process. Once selected, Nouvel and the science center were in extended contract negotiations.

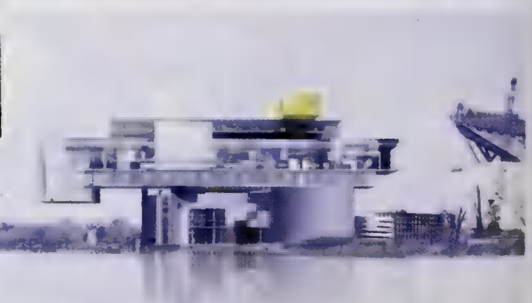
Construction will likely begin in 2003 on the Nouvel building, which is a composition of rectilinear trays in steel and glass stacked on top of the existing building. The cantilevered volume will allow dramatic river views, and transparent and translucent walls may have images of technology projected onto them. The riverside cantilevered volume is similar to Nouvel's 2000 design for a hotel in Brooklyn, which would have cantilevered over the East River near the Brooklyn Bridge. The hotel will not be built, but, "In Pittsburgh," Nouvel says, "I can prove it is a good idea."

Carnegie Science Center director Seddon Bennington calls the Nouvel addition "an innovative and far-sighted investment." He cautions, though, that the design will evolve. The facility is expected to open in 2008.

This will be Nouvel's second major U.S. commission. His design was unveiled in February for the Guthrie Theater in Minneapolis [March 2002, page 24], which will also feature cantilevered volumes. *Charles Rosenblum and J.E.C.*

Nouvel's design (shown at night above) includes a dramatic glass-and-steel cantilever over the Ohio River.





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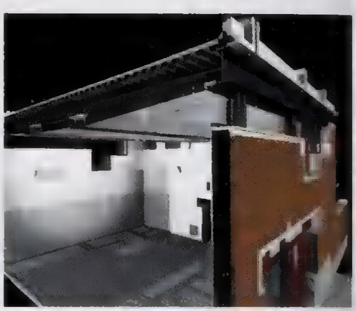
Ranalli inspired by Wright for center



The New York City Housing Authority has built or plans to build 80 new community centers. One of the most distinctive, and the only one that may be mistaken for a Frank Lloyd Wright design, will be the $2.9 million Saratoga Community Center in Bedford-Stuyvesant, Brooklyn, by New York architect George Ranalli.

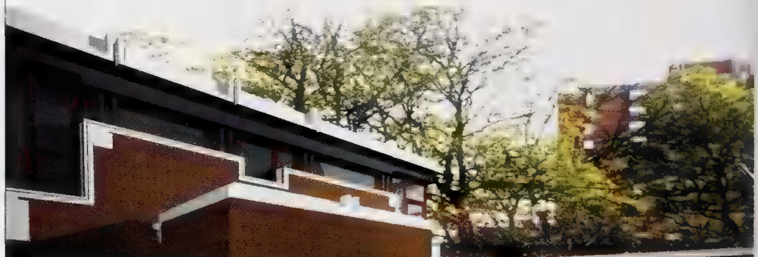
The new building, to be completed in June 2003, adds 3,500 square feet to the 16-story Saratoga Village residential tower. Ranalli's design recalls Wright in its broad, horizontal masonry volumes, massing, geometric detailing, and flow of spaces. Currently the dean of the City College of the City University of New York School of Architecture and Environmental Studies, Ranalli did his master's thesis at Harvard on Wright.

"The design of the building is a reevaluation of the idea of public construction seen as durable, strong, and permanent," Ranalli notes in his design statement about the community center. He expressed that permanence in materials such as brick on the exterior and mahogany doors and windows.

The steel roof structure (above) is exposed to the interior and is supported by paired steel columns. Inside, the community center will include a main multipurpose room, game room, reading room, offices, and kitchen. Ranalli is also renovating the existing 1,500-square-foot community center space in the residential tower to connect to the new building.

A large outdoor terrace will include an 18-by-19-foot concrete slab for viewing movies outdoors in warm weather. The terrace will be a social space for a variety of outdoor programmed activities sponsored by city agencies.

The community center building boom has included some notable completed projects, including the $5.9 million Melrose Community Center in the Bronx [March 2001, page 130] by Agrest & Gandelsonas and Wank Adams Slavin Associates. *J.E.C.*



The Saratoga Community Center by George Ranalli was inspired by Frank Lloyd Wright in its horizontal masonry volumes, massing, and geometric detailing.

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With a tight budget, construction begins on Pelli's Miami performing arts center

Cesar Pelli, FAIA, describes his design for the Performing Arts Center of Greater Miami as an ambitious project that could vault Miami to the top of the national arts scene. In terms of scale, it is already being compared to Lincoln Center in New York.

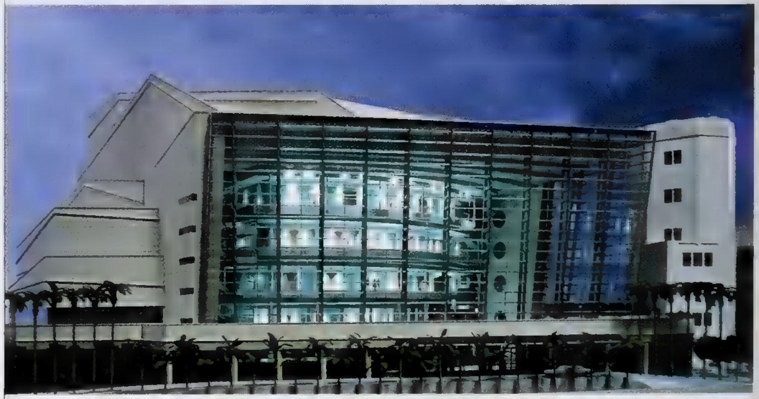
Construction began last fall on the $334 million, 450,000-square-foot performing arts center by Cesar Pelli & Associates. Located on Biscayne Boulevard between Northeast 13th and 14th streets, the center will open in fall 2004 with two separate theater buildings: a 2,480-seat ballet and opera theater and a 2,200-seat orchestra hall. The complex will be clad in white granite and glazing, reflective during the daylight hours.

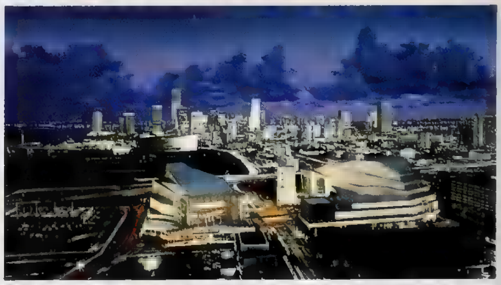
Between the two buildings there will be an oval-shape, 57,000-square-foot outdoor Plaza for the Arts. Sheltering colonnades and cascading garden terraces will surround the plaza, whose floor pattern is based on West and North African and Caribbean designs.

"I wanted the complex to look fresh, strong, exciting, welcoming, and very well suited to the climate and the light of Miami," says Pelli. "The forms that we have conceived for the exterior are forms that are going to be very beautiful against the dark blue skies of Miami."

The Miami-Dade County Commission set a hard-line budget for the two-hall structure, and the county had negotiated with the contractors for months to lower their bid before allowing construction to begin. Contractors were forced to trim $24 million from their original bid to get to a $255 million construction budget. Pelli said the design lost some "niceties" through the process. It could have been worse. *The Miami Herald* reported that contractors suggested last summer an exterior of precast concrete panels rather than stone in order to build on a tight budget. Luckily, that compromise was not necessary.

Pelli remains optimistic about the arts center impact: "Downtown Miami has the potential of becoming a great cultural, commercial center." *Jennifer LeClaire and J.E.C.*





The Performing Arts Center of Greater Miami (foreground in right photo) will include the Sanford and Dolores Ziff Ballet Opera House (above and furthest right in right photo).

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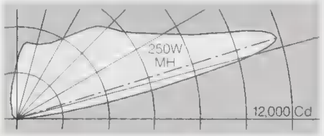

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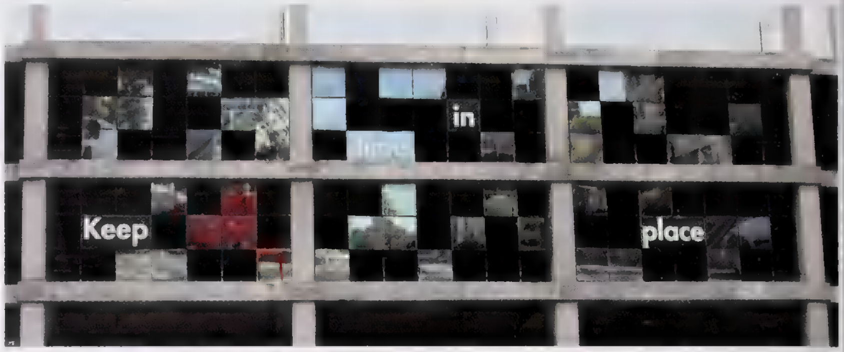

The fabric panels, with images and text printed on them through a digital process, are affixed to a cable system (below) on the concrete Intel structure in downtown Austin.

Installation on forlorn Intel structure prompts viewers to "take time"

When the economy began to slow down more than a year ago, so did the fortunes of Intel, the world's largest chip maker. In March 2001, Intel unexpectedly shut down construction on its $124 million, 10-story downtown Austin, Texas, research and design center, designed by Graeber Simmons & Cowan, when the building's concrete structure was only six stories tall.

The microprocessor giant suspended the project and fenced off the structure, hoping construction might resume when the downturn reverses.

Until recently, the abandoned structure has been an eyesore in Austin. Intel has been working with a group of four University of Texas students to camouflage the unfinished building with an art installation, titled *Take Time*, comprising more than 100, 4-foot-square, mesh-fabric panels affixed to the upper floors of the structure. The panels, being added over the course of three months, will ultimately depict Austin cityscapes and landscapes accompanied by messages such as "take time to breathe" and "let time fall into place." Going up in stages since February, the installation will all be in place by the end of April, and it will stay up indefinitely.

The installation is intended to prompt the thousands of Austin commuters who pass the structure daily to ponder developments taking place around them. "We wanted to look at it as a positive opportunity for Austin to reflect on itself as a city and on the nature of change," says Daniel Olsen, a University of Texas associate professor supervising the design team composed of four students in the second year of the communication-design program: Carolyn Moore, Katie Phillips, Ian Searcy, and Ryan Thompson. Intel has budgeted $30,000 for materials and scholarships as compensation.

"This is a temporary fix," Intel spokesman Fred Shannon says. "We had committed to the city of Austin to do something about the building in its current state." While Shannon stresses Intel's desire to complete construction, the company has also received offers from prospective buyers. *Stephen Sharpe*

PHOTOGRAPHY: IAN SEARCY

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News Briefs

Graves gets playful in Minneapolis Michael Graves, FAIA, unveiled his design in March for the expansion and renovation of the Children's Theater Company (CTC) in Minneapolis. The whimsical $24 million building will be an expansion to a 1972 white brick building by Kenzo Tange and will include a 288-seat theater and classroom and rehearsal space. The CTC, awaiting $12 million in bonding funds requested from the state, hopes to start construction in order to open the facility in 2004.

Graves's lively CTC addition geometry.

PHOTOGRAPHS: COURTESY THE ARCHITECTS (BOTH)

Judge strikes down High Line destruction plan A New York state judge struck down a plan to tear down the High Line [February 2001, page 34] on Manhattan's West Side. Justice Diane S. Lebedeff of the State Supreme Court of Manhattan ruled on March 12 that the plan approved in the final days of the Giuliani administration violated city law by circumventing public review. Activists have organized to save the High Line elevated rail line and convert it into an esplanade. Nearby property owners who hope to demolish the High Line will appeal the decision.

New museum for African-American history in Baltimore RTKL, in a joint venture with The Freelon Group, has designed a new Maryland Museum of African American History and Culture, to be located at the corner of Pratt and President streets in Baltimore. Funded by the state of Maryland, the $19 million, 80,000-square-foot building will have five floors for exhibition areas, interactive learning areas, and a 200-seat auditorium. A red "intervention wall," intended as a metaphor for the multitude of life issues that African-Americans have confronted in Maryland, faces a central atrium. The museum, which will be the second largest African-American museum in the country, will open in late 2003 or early 2004.

African-American history museum in Baltimore.

Major addition for Chicago's Union Station The Chicago Landmarks Commission has approved plans by Amtrak and the Chicago-based developer Prime Group Realty Trust to build a mixed-use redevelopment of Union Station. The commission also granted Union Station official landmark designation. The addition, designed by Chicago architect Lucien Lagrange, would more than double space in Union Station and add a 26-story tower. Daniel Burnham, the original architect of Union Station, had planned for a tower to be built after the station was originally completed in 1925. The new building, which could be completed by 2004, would contain 150 condominium units and 480,000 square feet of office space, while the existing building would be renovated to include a Hilton-operated hotel and conference center.

bulthaup
kitchen architecture
ra Bines, Finance Director, Barcelona
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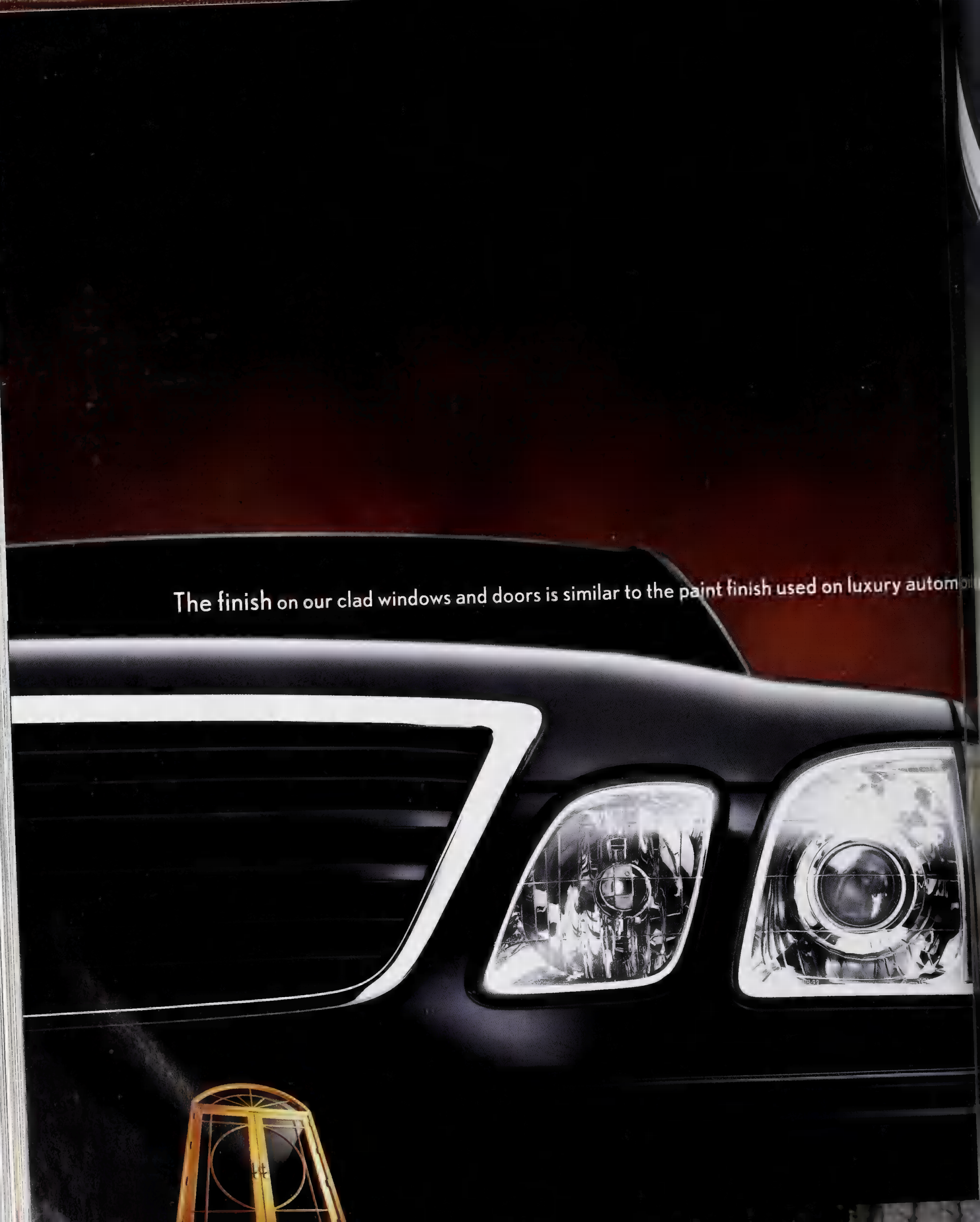
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Dates & Events

New & Upcoming Exhibitions

Gaudí Experiences: Space, Geometry, Structure, and Construction
Barcelona, Spain
March 20–September 27, 2002
Throughout his lifetime, Gaudí's feats of structural ingenuity and seemingly impossible design never ceased to amaze the public. In a tribute to his work, this exhibition unveils the mystery behind Gaudí's construction by exploring the exceptional methods of calculation used by the architect. At the Museu d'Historia de la Ciutat. Visit www.gaudi2002.bcn.es for more information.

Ten Shades Of Green
Houston
March 22–April 21, 2002
Ten Shades of Green seeks to illuminate the different environmental issues involved in architecture and design. The 10 shades refers to 10 projects that have been selected as remarkable examples of sustainability. Among them are Foster & Partners' Commerzbank and Renzo Piano's Beyeler Foundation Museum. Sponsored by the Architectural League. At the University of Houston. Contact 212/753-1722.

The Geometry of Seeing: Perspective and the Dawn of Virtual Space
Los Angeles
April 16–July 7, 2002
Through illustrated treatises, drawings, and prints, this exhibition traces the complex yet fascinating history of perspective drawing over a period of four centuries. On display is an extraordinary range of theories and rendering techniques, including the work of Leon Battista Alberti, Albrecht Dürer, and Sebastiano Serlio. At the Getty Center. Contact 310/440-7360.

Moebius Band Sculpture
San Francisco
April 7–May 5, 2002
This band sculpture, by German artist Valeska Peschke, invites visitors to walk on an "impossible" surface. It is a 20-foot-long interactive experience with a seemingly two-sided, ribbonlike form that is actually one surface. This event is included with the price of admission to the museum. At the Exploratorium. Contact 415/561-0357.

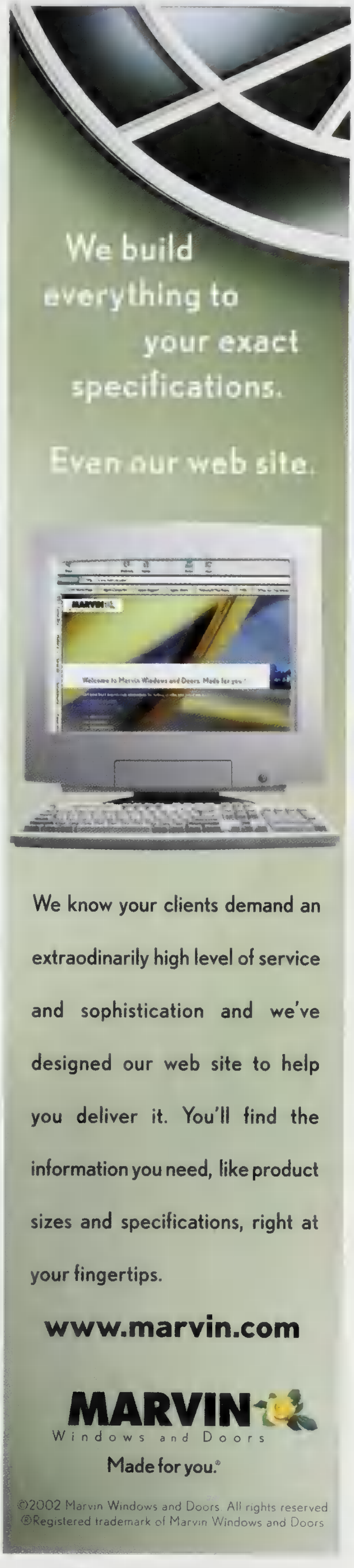
Houses X Artists=Design Without Rules
West Hollywood, Calif.
May 10–June 25, 2002
Commencing this six-month exhibition is the first phase of *Houses by Artists*. The Mak Center in collaboration with architecture firm OpenOffice has invited 10 contemporary artists to stretch their imaginations and each design a house free of the typical restraints imposed on architects by professional practice. Their proposals will be presented in model and digital form as they evolve in three phases over the next six months. At the Mak Center. Contact 323/651-1510.

Ongoing Exhibitions

Renewing, Rebuilding, Remembering
New York City
Through April 12, 2002
A photographic exhibition investigating cities that have been rebuilt in the wake of man-made and natural disasters. Photographs, renderings, and models will illustrate a diverse response to traumatic events and their dynamic impact on urban life. Among the cities on display are Berlin, Lebanon, Oklahoma City, and Manchester, England. At the Van Alen Institute. Contact 212/924-7000.

Museums for a New Millennium
Fort Worth
Through April 14, 2002
Finally making its United States debut, this international traveling exhibition presents the designs of 25 world-renowned museum buildings through architectural drawings, photographs, and original models. Featured projects include works by Norman Foster, Zaha Hadid, Daniel Libeskind, and Santiago Calatrava. At the Modern Art Museum of Fort Worth. Contact 817/335-9215.

Isamu Noguchi: Sculptural Design
Weil am Rhein, Germany
Through April 21, 2002
Bridging the gap between fine and applied arts, this exhibition features the astounding artistic versatility of sculptor Isamu Noguchi, whose work extends into the fields of architecture and design. On view are more than 80 projects—sculptural works, furniture, stage sets, and public design. At the Vitra Design Museum. Contact 49 7621 702 3351.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Dates & Events

Cesar Pelli: Connections
Washington, D.C.
Through April 28, 2002
One of the most comprehensive retrospectives on the life and work of distinguished architect and AIA Gold Medalist Cesar Pelli. Through photographs, photo murals, more than 100 drawings, and 30 originals models, the show will explore over a half century of his career, culminating with his most recent work. At the National Building Museum. Call 202/272-2448 for more information.

Architecture Flirts with Art: UN Studio/Matrix 146
Through April 28, 2002
One of the first museum exhibitions devoted to the innovative architectural designs of the Amsterdam-based UN Studio. The show's blend of digital and physical representation will feature some of the firm's most notable work, including the Erasmus Bridge and Mobius House, in a fashion that mirrors the firm's imaginative approach to digital technology and architectural design. At the Wadsworth Atheneum Museum of Art. Call 860/278-2670 for more information.

Mathematica
San Francisco
Through May 5, 2002
This Eames-designed exhibition from 1961 showcases mathematics as both a science and a tool for art. Forty years later, it remains the only Eames exhibition still in existence. Other Eames designs on display include toys, home electronics, and lesser-known furniture. At the Exploratorium. Contact 415/563-7337 or visit www.exploratorium.edu.

WTC: Monument
New York City
Through May 5, 2002
As a tribute to the Twin Towers, this exhibition provides an in-depth exploration of the buildings' conception, design, and construction, beginning in the 1960s. It includes a 7-foot-tall architectural model of the towers by WTC architect Minoru Yamasaki, and a film commissioned by the Port Authority. At The Skyscraper Museum. Call 212/968-1916 for more information.

The Way of the Tea
New York City
Through May 9, 2002
In this exhibition, architects, designers, and artists explore the enduring influence of the tea ceremony upon contemporary art, architecture, and industrial design throughout Asia. Featured designers include architect Masayuki Kurokawa, graphic designer Kan Akita, and interior designer Takashi Sugimoto. At the Japan Society. For more information, call 212/832-1155.

Mood River
Columbus, Ohio
Through May 26, 2002
Explore the forms, materials, and textures of contemporary design through a close look at the objects and icons that define our everyday reality. This exhibition features more than a thousand products and designs from the worlds of fashion, sports, and technology, representing such designers as Philippe Starck, Frank Gehry, and Issey Miyake. The show is accompanied by a series of lectures, discussions, and walking tours. At the Wexner Center. Contact 614/292-3535.

Mies in America
Chicago
Through May 26, 2002
An exhibition of work from the late career of the German architect Ludwig Mies van der Rohe, after he arrived in America in 1938. The Seagram Building in New York and the Farnsworth House in Illinois are among the show's highlights. At the Chicago Museum of Contemporary Art. Contact 312/280-2660.

US Design, 1975–2000
Denver
Through May 26, 2002
Through a choice selection of drawings and designs, this exhibition celebrates the work of American designers in the last quarter of the 20th century. Included in the show—extending to architecture, industrial design, and beyond—are such designers as Robert Venturi, Maya Lin, and Steven Holl. At the Denver Art Museum. Call 720/865-5000 for more information.

Utopia & Reality: Modernity in Sweden 1900–1960
New York City
Through June 16, 2002
This timely exhibition surveys Swedish art and culture from the first half of the century, when youth, progress, and innovation became vehicles for understanding the advent of Modernism and the rapidly changing world that followed. A full range of artistic expression will be covered, from architectural drawings and models to painting, sculpture, graphic design, and photography. At the Bard Graduate Center. Contact 212/501-3000.

The Alliance of Art and Industry: Toledo Designs for a Modern America
Toledo
Through June 16, 2002
In the 1930s, Toledo was a hotbed for cutting-edge industrial design. Now, almost a century later, it is celebrating its past with this exhibition at the Toledo Museum of Art. Among the 180 products included are cars, scooters, appliances, furniture, gadgets, and even a life-size model of the wildly modern "Kitchen of Tomorrow," presented in 1942. For more information, call 800/644-6862.

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London
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practice, this exhibition is the third in a series linking the work of celebrated contemporary world architects with the tenets and themes that are reflected in the unique collection of architectural ephemera, sculpture, and painting in the Sir John Soane's Museum. The show includes models, film projections, and a selection from concept sketchbooks. At the Sir John Soane's Museum. For further information about the exhibition, contact William Palin at will.palin.soane3@ukgateway.net.

Lectures, Symposia & Conferences

The Eames Design Legacy: Eames Demetrios
San Francisco
April 24, 2002
Eames Demetrios, currently principal of Eames Office, will speak on various topics related to design, sustainability, and the connection between the physical world and cyberspace. The talk will take place at the Exploratorium. Contact 415/561-0363.

Kennedy & Violich: Material Misuse
New York City
April 25, 2002
The two architects will present recent projects and discuss the work of MAT^{X}—an exploratory new materials research unit at Kennedy & Violich Architecture that investigates preformative materials. Hosted by the Architectural League of New York. At The Scholastic Auditorium. Contact 212/753-1722.

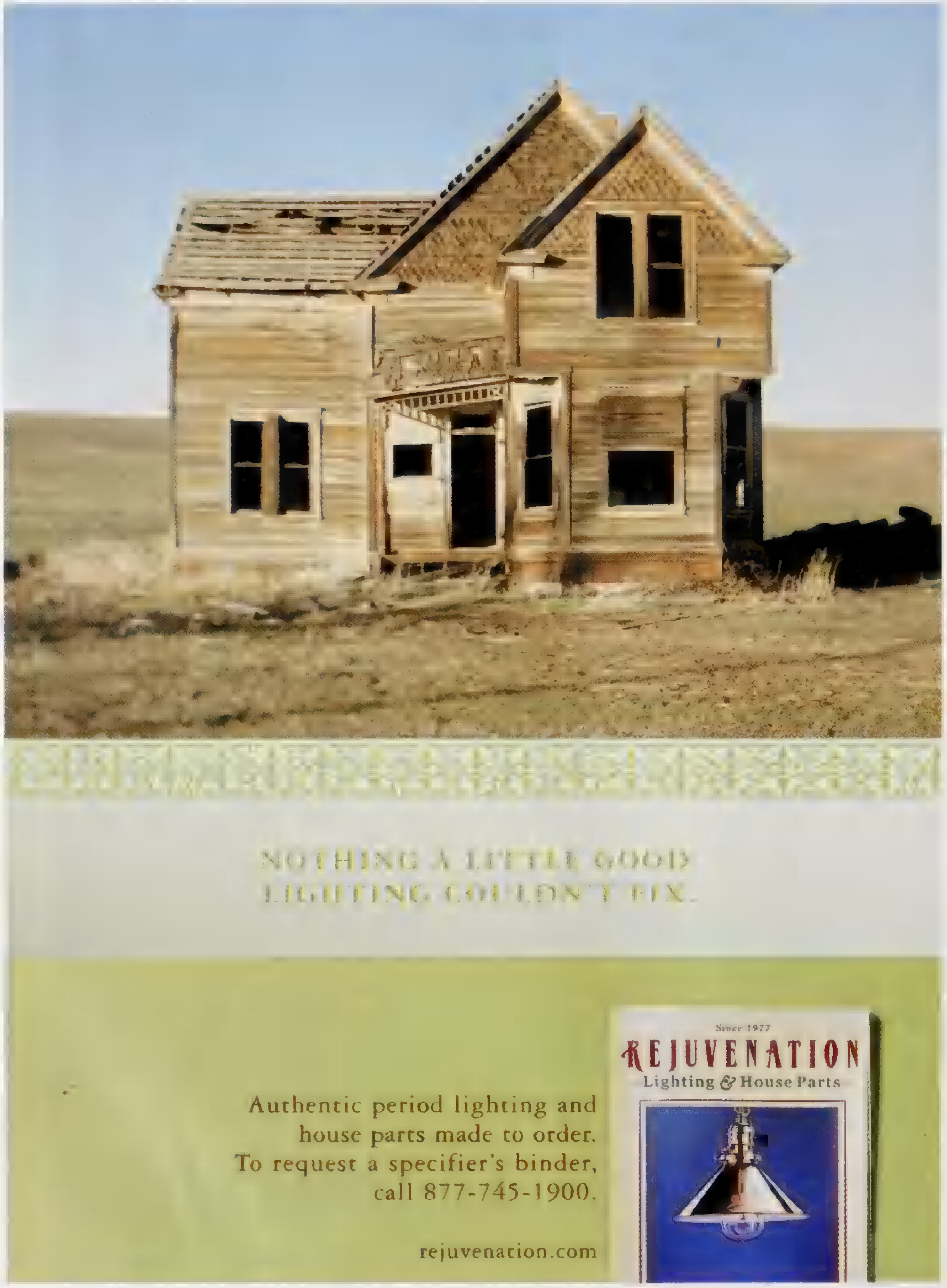
International Quingue Symposium
Newport, R.I.
June 27–30, 2002
This four-day symposium brings together architects, artisans, and scholars to examine key issues in historic preservation practices. It will feature the work of local preservationists and institutions. At the Salve Regina University. Call 401/341-2156 for more information.

Universal versus Individual: The Architecture of the 1960s
Jyväskylä, Finland
August 30–September 1, 2002
This conference will explore the architecture of the 1960s inside and out by illuminating universal currents as well as individual and regional trends. Keynote speakers include Beatriz Colomina, Claes Caldenby, and Dennis Doorman. Sponsored and organized by the Alvar Aalto Academy. Visit www.alvaraalto.fi/conferences/universal for more information.

Conventions

Society of Environmental Graphic Design 2002 Annual Conference & Expo
Denver
May 31–June 1, 2002
Join fellow architects and designers in this year's SEDG conference, entitled "Trailblazing: Crossing Frontiers." Lectures, workshops, and discussions led by the industry's leaders will cover a broad range of topics including marketing, communication arts, exhibition design, and virtual reality. Also, view special exhibits and demonstrations at the accompanying trade show. At the SEGD conference center. Visit www.segd.org/events.html for more information.

XXI World Congress of Architecture
Berlin
July 22–26, 2002
The Union Internationale des Architectes invites architects and students from around the world to discuss responsibilities and strategies for environmental and sustainable design within an urban context. At The International Congress



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Competitions

Bus Shelter Competition
Bloomington, Ind.

Deadline: April 19, 2002

The Bloomington Community Arts Commission, in conjunction with Bloomington Transit, invites proposals for three new public bus shelters to be installed along a major thoroughfare that will be improved as part of a citywide transportation project in 2002. For information, contact BloomingtonArt@aol.com or call 812/336-0564.

2002 Business Week/
Architectural Record Awards

Deadline: April 19, 2002

This annual award program recognizes distinguished collaboration between client/architect teams who use design to achieve progressive goals. Entrants may submit projects completed anywhere in the world since January 1, 1999. Sponsored by the American Institute of Architects. Contact 888/242-4240.

Defining an Architecture for the 21st Century

Deadline: April 27, 2002

The Union Internationale des Architectes launches its first annual international urban-design ideas competition. Students and practitioners are invited to revitalize Berlin's inner city through proposals that set a standard and direction for future development. Winning projects will be exhibited at the 21st World Congress of Architecture 2002, on the theme of "Resource Architecture," in Berlin. Visit www.uia.com for more information.

Pilkington Glasshouse Competition

Deadline: May 31, 2002

Entrants are asked to design a house for the 21st century, exploring the architectural potential of glass. The winning schemes will demonstrate a creative approach to the use of glass as part of an overall design. It is left to the entrant to determine the exact requirements of the space in terms of the number and age of persons to be accommodated, number and size of rooms, accessibility, and related matters. Visit www.pilkington.com/glasshouse for more information.

Institute for Architecture and the Humanities Competition

Deadline: June 17, 2002

This is not a design competition. Rather, it is a competition for making judgments about design. Students are invited to revisit already completed work and write their own assessment of the strengths and weaknesses of the project. Open to students in undergraduate and graduate programs. First prize is $1,000. Call 312/733-7230 for more information.

The Great Egyptian Museum Competition

Deadline: August 10, 2002

An open invitation to architects from around the world to participate in the creative design of this new museum. Located near the Giza pyramids, the museum will house some of Egypt's most ancient monuments and treasures. For more information, visit www.gem.gov.eg.

Events & Programs

Summer Program in Classicism
New York City

June 15–July 29, 2002

Spend six weeks in New York City discovering the elegance of Classical architecture and principles of traditional urbanism. Students will have the opportunity to study with leading practitioners and work directly with a design studio community on real New York City projects. Deadline for application is April 15. Contact The Institute of Classical Architecture at 917/237-1208 for more information.

Eco-ARCHitecture
San José, Costa Rica

July 9–30, 2002

The faculty of Architecture and Urbanism of Universidad del Diseño invites students and practitioners to participate in a three-week studio exploring the biophysical and sociocultural conditions of design in a tropical climate. Application deadline is April 30, 2002. For more information, visit www.unidis.ac.ar.

E-mail events and competitions to ingrid_whitehead@mcgraw-hill.com. Please send notices of events and competitions two months prior to the event or deadline.

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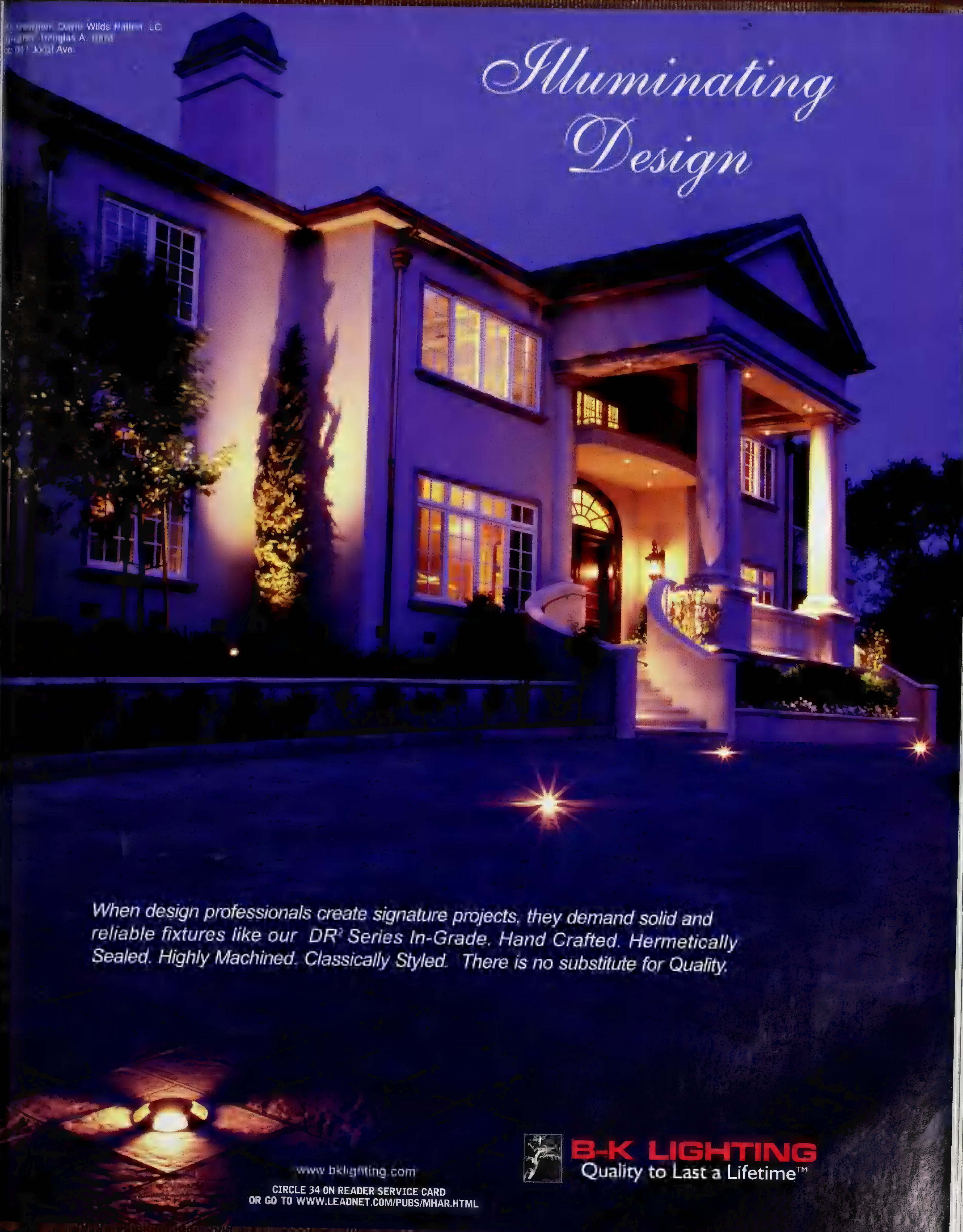
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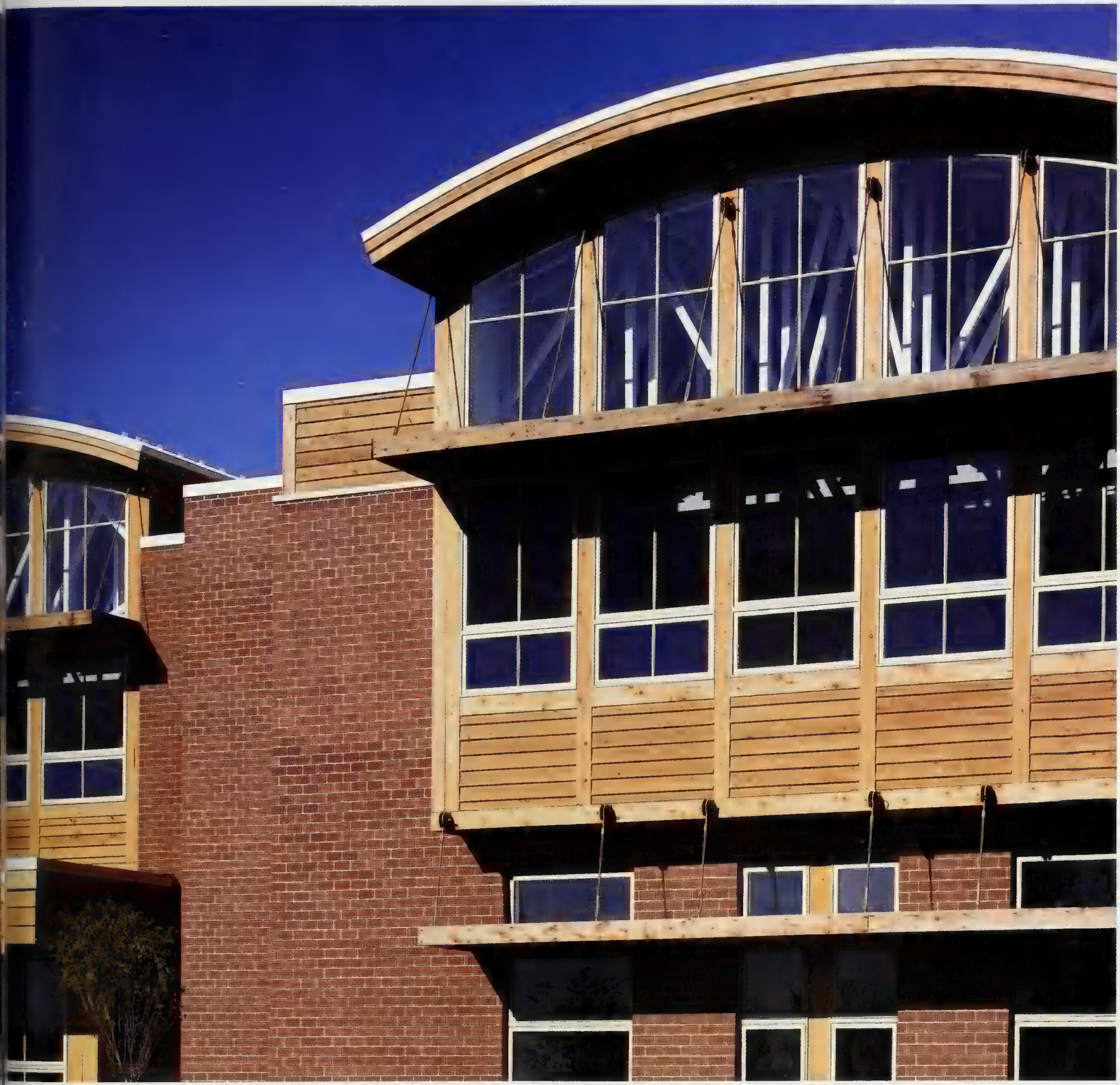

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Vancouver is transformed into a city of glass

Correspondent's File

By Sheri Olson, AIA

A bumper crop of shimmering glass residential towers—an astounding 150 built in the past decade—is transforming Vancouver's skyline. At a time when North American cities struggle to entice people back downtown, Vancouver's success draws delegations of city officials, developers, and urban designers from the U.S. to study aggressive planning policies that emphasize guidelines and incentives over hard regulations. Two huge developments, Pacific Place and Coal Harbour, are models for a unique manifestation of new urbanism: denser, taller, and without the historical pastiche.

"It's happening faster than anyone predicted," says codirector of city planning Larry Beasley. Since the 1980s, the central area's population grew by 35,000 to its current 75,000 and is expected to reach 100,000 by 2015.

Twenty years ago, growth was stalled by a lack of zoned residential properties in the constrained central city: Vancouver is on a 3-mile-long peninsula with 1,000-acre Stanley Park at its tip. The turning point came with the 1986 World Exposition, when the provincial government purchased rail yards on the north shore of False Creek for the fairgrounds. Not only did Expo open up prime waterfront when its 177-acre site was rezoned from industrial to housing, it was also the impetus for renewed civic pride. "The world discovered Vancouver at Expo, and it made us look around and realize how spectacular our natural setting is," says architect Gregory Henriquez. Expo also marked the beginning of an unprecedented flow of wealth and immigrants into the city due to jitters about Hong Kong's transfer to China. Vancouver's rebirth is not just a product of rezoning and the market, but the result of a comprehensive strategy honed by extensive post-Expo public meetings and summarized in the 1991 Central Area Plan. The plan is highly discretionary; developers must earn the right to develop by providing public amenities. "The major difference between Canada and the U.S. is that we consider it a privilege, not a right, to develop," says Beasley.

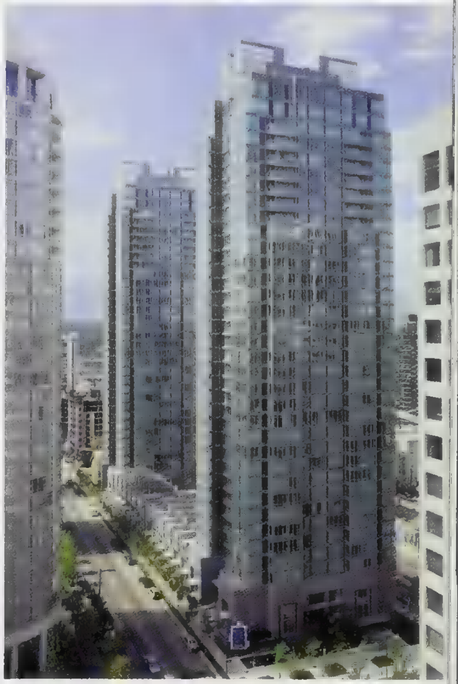
Rising on the old Expo grounds is Pacific Place, Vancouver's largest urban project and a poster child for its planning policies. Under construction since 1995, the $2 billion development will eventually house 18,000 people in 47 towers and town houses grouped in distinct neighborhoods. In exchange, the developer, Concorde Pacific Group, will donate 113 acres for public parks, marinas, and an elementary school. Concorde Pacific also was required to complete a portion of the 9-mile-long seawall promenade that wraps the city. Visiting U.S. developers balk at the amenities requirement until they hear that the city's demands are balanced by an analysis of a project's program. "We know the public value but don't intrude on basic profit and risk," says Beasley.

Offshore immigration kick-started the demand for high-density housing, but it is not enough to sustain it. Decisions made in the 1960s to build public transit, not freeways, stymies the flow of private cars from the suburbs, making congestion a motivating factor for living downtown. The city took more specific measures to attract families by requiring that 25 percent of all units be designed with children in mind. Guidelines call for larger units, often in ground-floor town houses, with outdoor play areas visually accessible from indoors. One indication that the strategy is working is that Pacific Place's new waterfront elementary school is under construction three years ahead of schedule.

Pacific Place's Roundhouse Co-op, by Neale Staniszkis Doll Adams Architects.

City policies insist on a mix of income levels to battle the twin evils of gentrification and ghettoization. "The large condo market and a lack of rental housing makes it difficult for the working poor," says Ehman. New developments must set aside 20 percent of units for nonmarket public housing, with 5 percent of that for the "hard-to-house." Pacific Place's largest social housing project, the Roundhouse Co-op (named after the 1889 engine turntable that remains from the old rail yards) integrates market and nonmarket units in a brick-and-glass design by Neale Staniszkis Doll Adams Architects to blend with the surrounding development.

The city realized that public consensus was key in achieving a housing vision of this scale and developed a cooperative planning process to build it. Issues and concerns are raised early in ongoing consultations between neighborhoods and the developer. Politicians make policy while developers are approved by appointed officials and ratified by a peer panel, depoliticizing the process and allowing an emphasis on urban


Residences on Georgia, by James Cheng.

Sheri Olson, AIA, is RECORD*'s Seattle-based contributing editor.*

design. "The design process is so strict and the city's expectations are so high that developers realize they have to hire architects capable of working with the city to obtain approval," says Ehman.

Local conditions are fertile ground for a building type now associated with Vancouver: a slender tower on a medium-rise base of town houses with a private interior garden. These distinct glass towers—dubbed "see-throughs" by locals—are the result of the premium placed on views of the water and mountains. "Views are like hard cash," says Beasley. City policies limit floor plates, keeping buildings slim to protect view corridors. Canadian building codes, unlike those of the U.S., permit scissor stairs that allow a small central core. Less conservative seismic codes decrease exterior shear walls and free up the facade for more glass. Canadian manufacturers working with Vancouver architects developed an economical preglazed window-wall system that gives the city its trademark transparency.

"As a young city, Vancouver has always welcomed modern architecture," says architect James Cheng, the designer of 17 high-rises, with another three under construction. His sleek glass Residences on Georgia won a 1998 Governor General's Award for its exemplary response to the city's urban design guidelines, but he regards Vancouver's changes with a critical eye. "It's an instant city; we're compressing 50 years of building into 10. The question is how do we put variety and diversity into something when we don't have time on our side?" says Cheng.

Vancouver's other major housing development under construction is on old rail yards along Coal Harbour on the north edge of downtown. Unlike Pacific Place, which was developed by one company, this site has different developers and urban design strategies. Marathon Developments, a branch of the Canadian Pacific Railroad, is building 2,200 condos in 18 towers. The city faced pressure to dedicate the site, with its expansive view of Burrard Inlet and Grouse Mountain, as a major public space. The challenge for Civitas, urban designers for the 41-acre site, was to place towers on the south edge of the long, narrow site without casting shadows on the linear park on the north. The focal point of the park is the Coal Harbour Community Center by Henriquez Architects. It manages a public presence under its lid of grass designed so that it obstructs neither park nor views.

Where the Marathon Development is hard up against the downtown core and continues the urban street wall, Bayshore, as the gateway to Stanley Park, takes a towers-in-the-park approach to the 23-acre site. "The difference between the two projects—the new urbanist versus Corbusian—shows the flexibility of city policies: It's not by-the-books new urbanism," says Ehman, whose firm is designing one of the project's 10 towers. With a master plan by Milkovich/Erickson for the Tokyo-based Aoki Corporation, the $300 million Bayshore development will house 1,800 people in 980 condos that terrace back from the water.

The last waterfront site, 50 acres along Southeast False Creek, is potential housing for athletes for the 2010 Olympics before it is developed as a residential community, with limited commercial and light industrial space, for 8,100 people. "The city's objective is to make it a model sustainable urban community," says urban designer Joseph Hruda of Civitas. With another three new neighborhoods being planned for an additional 16,000 people downtown, a Sunday afternoon of dim sum followed by a walk on the seawall and a sales presentation at a condominium development may become a Vancouver tradition. ■

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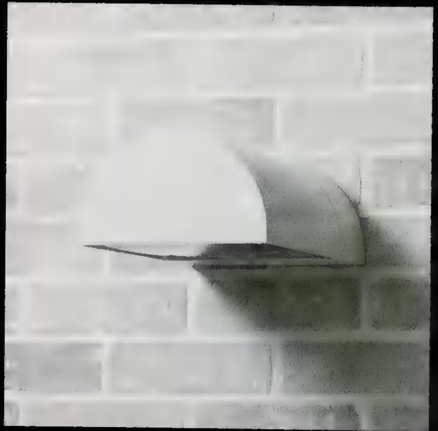

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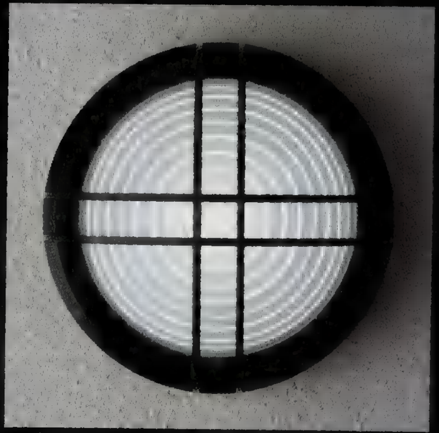

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archrecord2

FOR THE EMERGING ARCHITECT

Sometimes, small projects can get their designers big notice. Lisa Iwamoto and Craig Scott obviously have big designs in their back pocket, ready to pull out for the right client. But in the meantime, they're happy to build a single room. archrecord2 also presents a project from a Florida intern who built a nifty toolshed in his backyard, attracting the interest of his boss, who was at the intern's house for a party. Which just shows that size doesn't always matter.

DESIGN

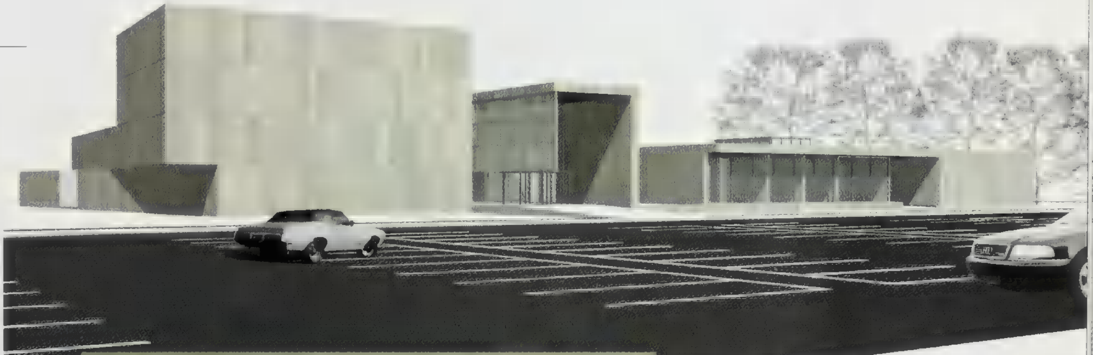
IS.Ar Iwamoto Scott Architecture

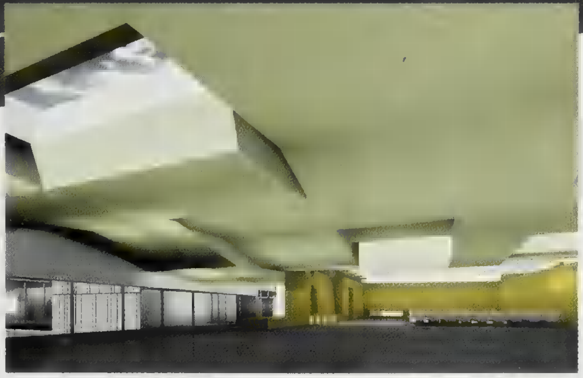
For Craig Scott and Lisa Iwamoto, professional collaboration came second, but their careers still come first. A couple for almost 15 years, the pair have only been working together for five or six years, traveling independently back and forth across the continent for primarily professional reasons. They met in Berkeley, and both worked with RoTo Architects there. Then they each ended up at the Harvard Graduate School of Design, but in different years. After graduation, both landed in Ann Arbor, Michigan, where they taught—and Scott still teaches—at the University of Michigan. Now, they are halfway through one last move, back to California (Iwamoto has already gone and is teaching at the University of California at Berkeley), which they both consider home. In fact, one of their current projects is their own house. Somehow, they have still found time in all of this moving to design buildings as well as innovative and original furniture.

IS.Ar Iwamoto Scott Architecture's commissions come from all over—friends of friends, competitions. One even came from a someone who posted a note on a bulletin board.

"Unfortunately, a lot of people come to the school, thinking they can get architecture for cheap or free," Scott said. "But some of them pan out. We have a church client right now, a pretty sizable addition, who approached the school."

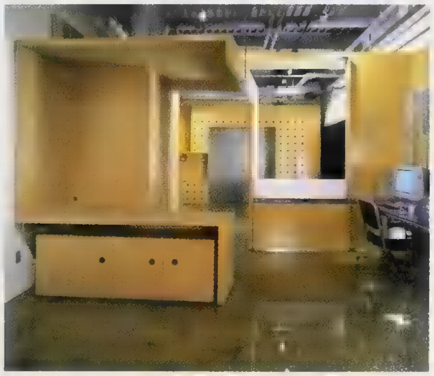
Iwamoto and Scott not only designed and built one of their early projects, a faculty resource room at the University of Michigan, but they raised the money for the project themselves. The low budget required the pair to use particleboard and medium-density board for the walls, but they spent more money on the surfaces that people would actually touch, which is a testament to the thought that this young firm puts into the details of their projects.





Flemington Jewish Community Center Competition, Flemington, N.J., 2001

L/IS Levit Iwamoto Scott. With a colleague, Robert Levit, the architects addressed the dual nature (secular and religious) of a traditional synagogue by separating the functions but drawing them together with repeated patterns.



Faculty Resource Room, Ann Arbor, Mich., 1999

IS.Ar Iwamoto Scott Architecture. The architects, who were both teaching at the University of Michigan, converted a little-used, windowless concrete-block room into an inviting and crowded faculty room, with space for computers and slide making. They raised the money themselves.

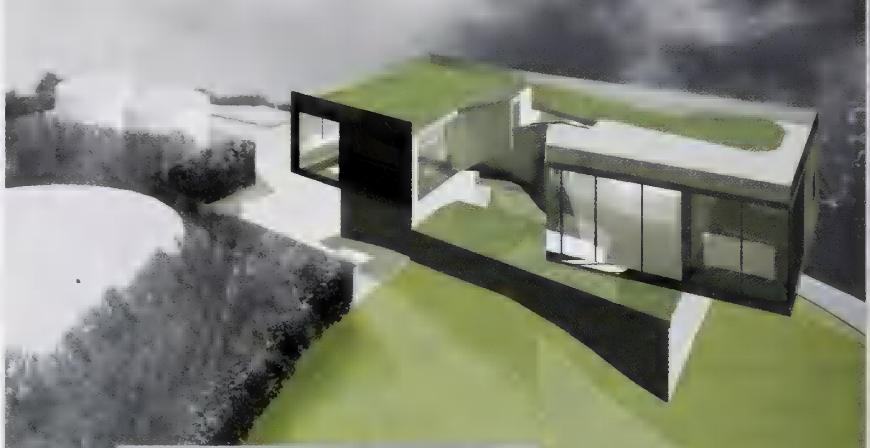
(continued from previous page) Typical of their more recent work is the Fog House, a private residence designed to make the most of a Marin County, California, hilltop location. Unlike the existing house on the lot, which is half-buried into the hill, this project is perched on a ridge to take better advantage of 270-degree views sweeping out toward San Francisco Bay and the surrounding hills. Iwamoto and Scott want to use the project to combine earth-shaping landscape architecture with a glass box. The house even provides a path for the fog that sweeps in from the bay to float under and through the building itself. In an early concept meeting, the client asked for a design that was "like living on a single floor of a high-rise."

"That obviously piqued our interest," Scott said.

The project has been on hold for a time, while the client has concentrated on other projects, but Scott and Iwamoto hope to use their impending move to California to rekindle his interest in the house.

"Part of the idea of moving out to California is to be able to pursue practice even more actively," Iwamoto said. "Because at Michigan, we were both teaching every day. It's quite difficult for both of us to be full-time teachers and to have a practice." One suspects, given their output in the past, that they would have found a way to sustain that practice anyway. *Kevin Lerner*

Go to architecturalrecord.com/archrecord2 for more projects from IS.Ar Iwamoto Scott Architecture, and to learn how to submit your own work.



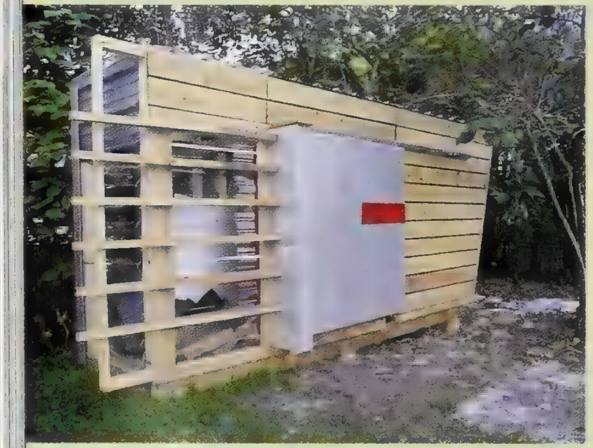
Fog House, Marin County, Calif.
IS.Ar Iwamoto Scott Architecture. Perched on a hilltop outside San Francisco, the planned house would incorporate not only its surrounding landscape, but the weather, too.

LIVE

On the Side

Alain Valdes's toolshed

Necessity, as they say, is the mother of invention. So it wasn't stifled creativity or a love of working with his hands that spurred Alain Valdes, an intern architect at Gould Evans Affiliates in Tampa, to create this structure in his backyard. It was a much simpler motive. "I live in a bungalow, which has basically no storage space," Valdes says, "so I didn't have a place to put my tools or my lawn mower."



Valdes, 30, completed the academic work for his M.Arch. at the University of Florida in 2000. He worked for a year at another Tampa firm, Alfonso Architects, before joining Gould Evans.

Despite this training, Valdes, like many architects, really only had design experience. That paid off, though, since he went through about 20 different designs, filling an entire notebook, before he decided on the final look of the shed. Even so, his practical experience was limited. "I'd never built anything in my life," Valdes says, "so it was a pretty good learning experience."

Not only for him, but for his father, too, who, without any building experience, was Valdes's only help in constructing the shed. Still, the assistance was welcome—as Valdes says, "the weight of materials is something of a shocker."

The shed is about 4 feet by 16 feet, since it was originally designed to be sheathed in standard-size plywood sheets. This length also shields Valdes's backyard from an adjacent alley. The final facade is made of rough-sawn cypress. Valdes has since completed a deck and has plans for a new kitchen. "But that's a way off," he says. *Kevin Lerner*

For more "On the Side" stories, visit LIVE at architecturalrecord.com/archrecord2

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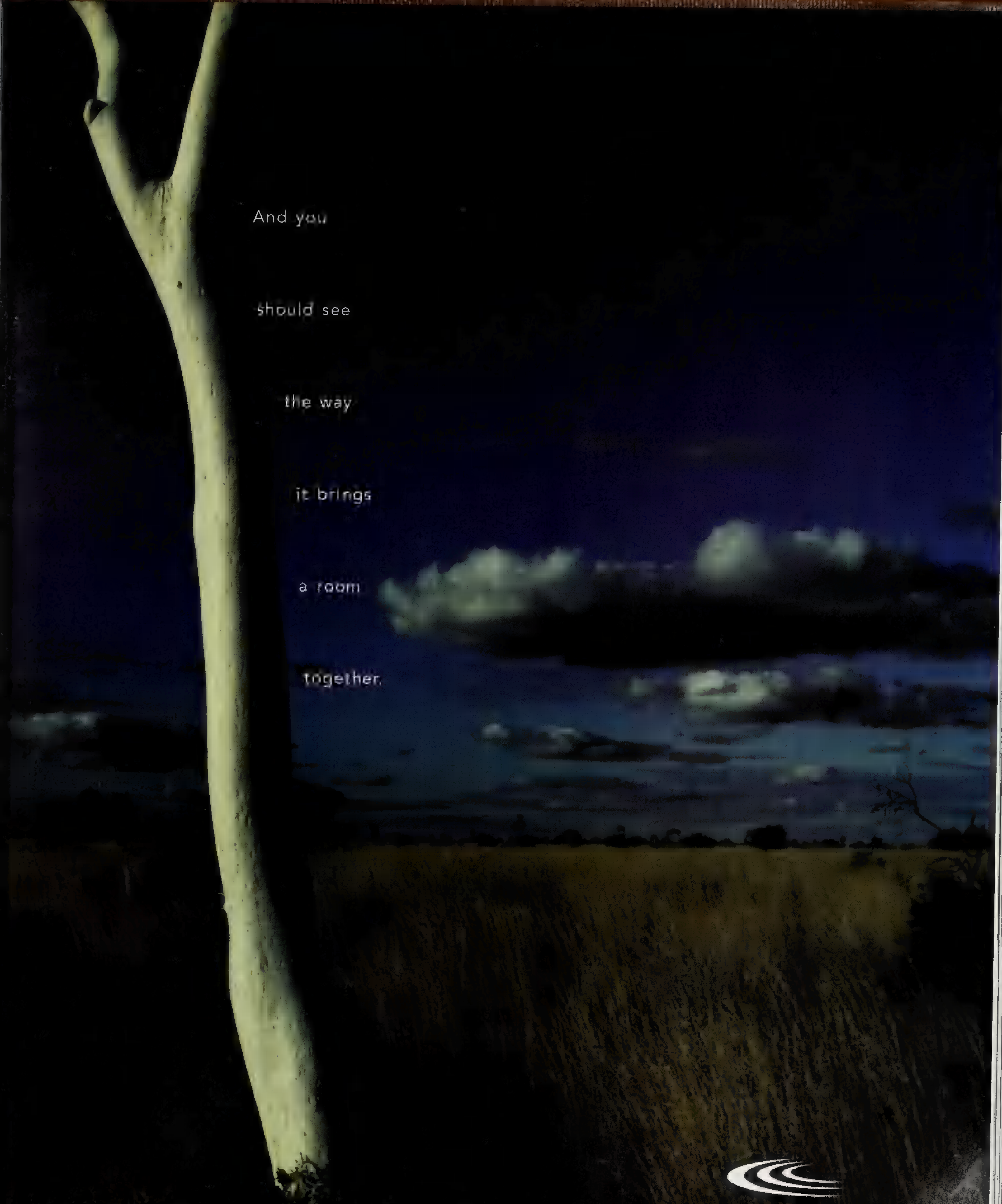

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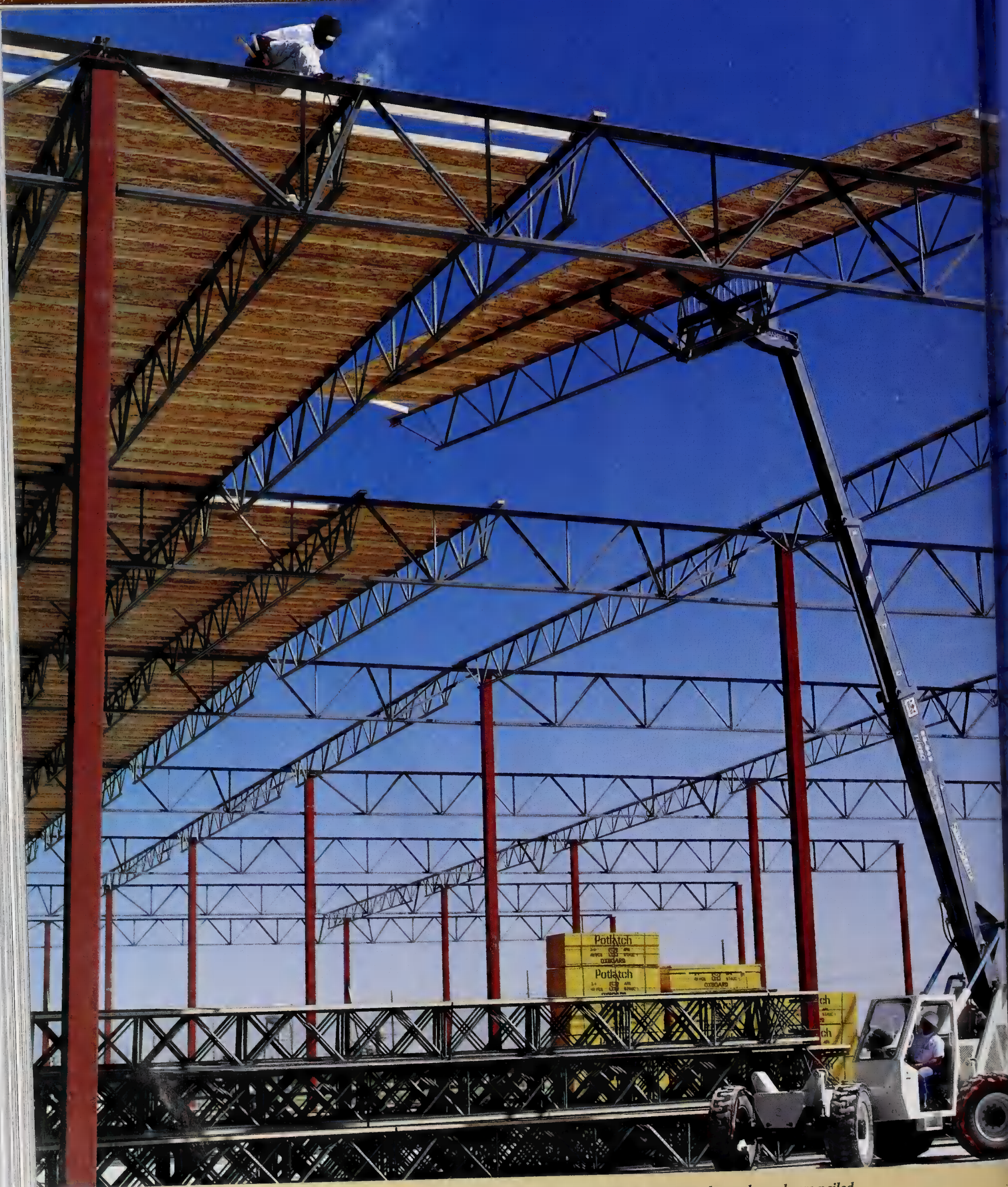

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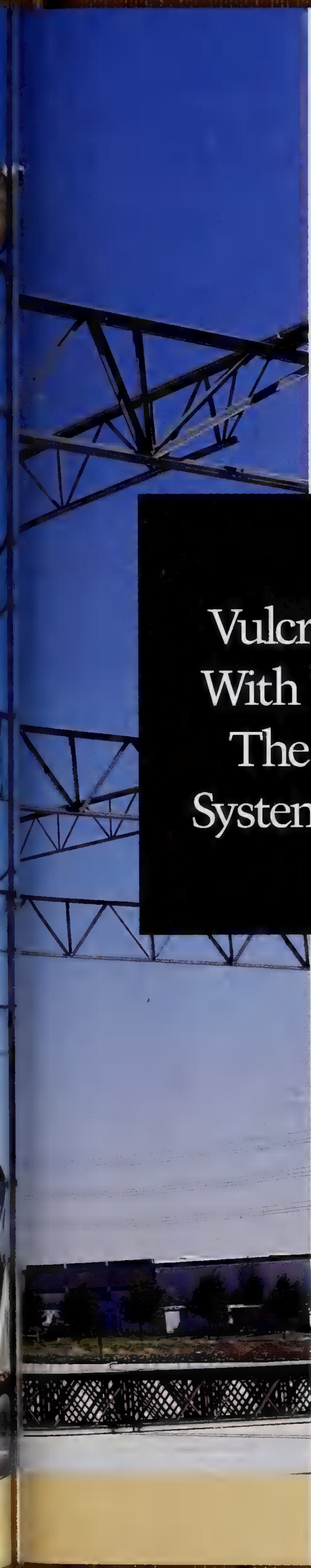

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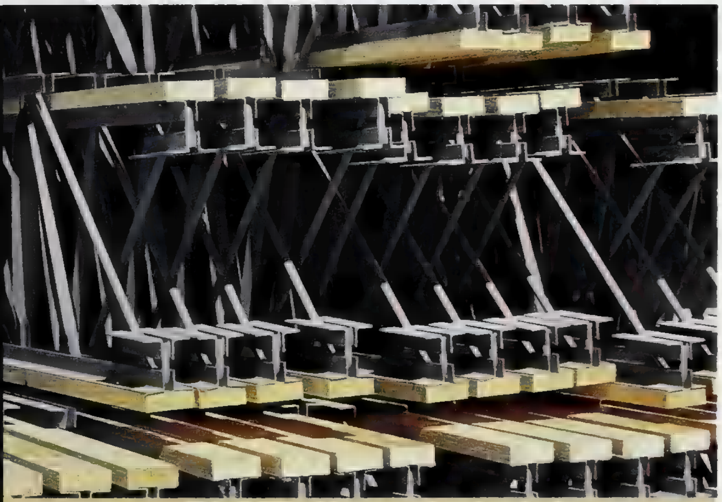

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It takes more than square feet to make a successful public park or civic place

Critique

By Robert Campbell, FAIA

Does anyone out there know what "public open space" is? I hear the term all the time, but I have absolutely no idea what it means. Technically, I suppose an asphalt street is a public open space. So is an Olmsted park. Can we really think about the quality of life by using such an abstract term?

People talk about public open space as if it were a statistic, rather than a human experience. In my hometown of Cambridge, Massachusetts, I've heard it said at public meetings many dozens of times that Cambridge falls short of a national standard for open space per capita. Nobody has ever identified where this national standard comes from, or who decided on it, or whether it is supposed to apply equally to dense cities like Cambridge and spaced-out suburbs. Nobody has defined what is meant by open space. Usually, it's just assumed to be grass and trees. Recently, a senior city planner said to me that you could never have too much open space in Boston. I pointed out that if that were true, we would welcome the complete disappearance of the city and its replacement by farmland.

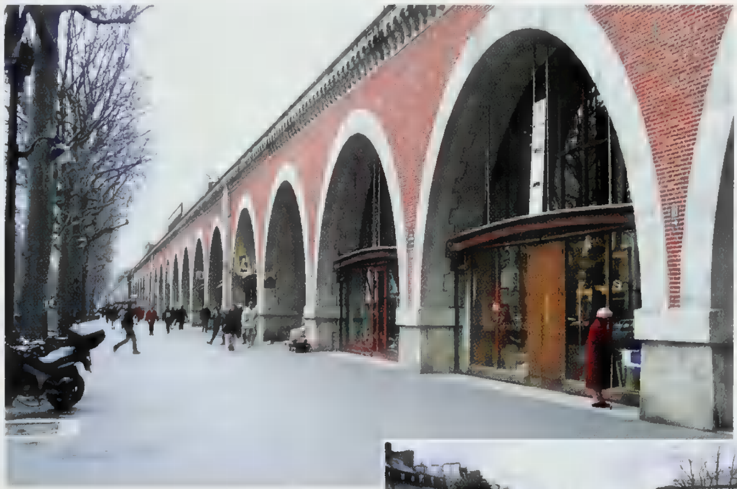
Good open space is of several kinds, which often overlap in one place. There's parade space for formal display or celebration, like Lincoln Center. There's green space for relief from the city, like Central Park. And there's community space for a mix of commercial and cultural activities—for the business of living—like the Piazza Navona or the Campo dei Fiori in Rome. (There's also ad-hoc space that simply gets appropriated for public use when it's needed, like Times Square after a triumph by the hated Yankees.)

We don't do any of these very well, as a rule. Maybe it's because we think about open space in such a statistical, numerological way. A recent visit to Europe was a bracing shock. Compared to us, the Europeans—in this case, the Dutch and French—are more inventive, more thoughtful, and much more generous in creating open space.

Getting wet

Case in point: Rotterdam. The Shouwburgplein ("theatersquare") is a plaza in the middle of downtown. There's a lot to see, but probably the first thing you notice is a row of light fixtures. They look like bright red Luxo lamps, except that they're maybe 30 feet tall. Like real Luxos, these lamps move. They're controlled by computer. Kids sit at consoles at the edge of the park and make the lamps move—pointing one down, perhaps, to cast light on a strolling couple. Not far from the lamps, there is a fountain—although you can't see that it's a fountain. It looks like simple paving until jets of water shoot up in unpredictable patterns. Kids race through on their bikes, the goal being not to get wet—or maybe it is to get wet. Grown-ups play chicken with the water, putting out a toe and pulling it back. If you walk through the plaza, you may notice that a hidden camera is projecting your moving image on the white facade of a building that occupies a corner of the plaza. The building, appropriately enough, is a multiscreen cinema. You've just become part of the show.

Even the plaza floor is full of interest. It's an abstract collage: green rubber, black rubber, wood, gray-green slate. In some places the paving is an open metal grille through which you can look down and see moving water. There aren't a lot of trees because there is a parking garage hidden under the plaza. But the trees are planted where they count, making a thick green edge behind the red Luxos.



In Paris, an old viaduct now houses shops at street level (above) and a linear park above (right).

I can't help comparing all this ingenuity to the trackless brick tundra that is City Hall Plaza, Boston's nearest approach to a paved civic space. But it isn't only good design that makes the Shouwburgplein successful. It's everything that feeds it. There's that cinema in the middle. Across a street stands the city's major concert hall. On another side is a performance building for dance, opera, and theater, with a restaurant overlooking the plaza. In all directions, there is housing. People live next to the Shouwburgplein. (Nobody lives next to City Hall Plaza. Or Rockefeller Center, for that matter.) Nobody thought of the Shouwburgplein as a mere statistic, as providing some required percentage of "open space." Instead, the designers—West 8 (Adrian Geuze)—invented something that works in every way.

Case two: Paris. The Viaduc des Arts is a formerly abandoned, decaying 19th-century railroad viaduct that has been converted by

Contributing editor Robert Campbell, FAIA, is the architecture critic of The Boston Globe.

architect Patrick Berger into a 21st-century combination of shops and parkland. The shops are tucked into the brick-faced arches that supported the old viaduct. Many of the shops display the work of craftspeople in metal, glass, or wood because the neighborhood traditionally was home to artisans. The shopfronts, in glass and steel, are tensely detailed bowstring arches, very much in the language of today. There's parking tucked almost invisibly underground.

A linear park with life

The shops beneath the viaduct, though, are less than half the story. The rest lies upstairs, on top of the arches. This is the Promenade Plantée. Three miles of the old trackbed have been converted into a linear park, with a level of invention (and maintenance) that would be incredible here. In places, the park spreads out into playing fields and strolling parkland, or into paved courtyards, or, in one case, into a cavelike hideaway. In other places, it narrows to a tight file atop the arches, edged by shrubs and trees of many varieties. In still another place, it shears its way through a building, splitting it in half. The designers have had fun with the drama of this linear park that insinuates itself through Paris like thread through a needle. (Philippe Mathieu and Jacques Vergely did the landscape.) Just as important, they've salted the length of the Promenade Plantée with new housing on both sides. (The same is true of other new parks in Paris, such as the Parc de Bercy and the Parc Citroën, both also on recovered industrial sites). People need parks, of course. Parks also need people. In Paris, both halves of the equation are alive.

Incidentally, New York now has a similar opportunity. The so-called High Line viaduct, in Manhattan's west teens and 20s, is an analogous rail relic, and its fans have contacted the Viaduc des Arts designers. A New York version would be very different but equally exciting.

What are the lessons here? Start with the client: In both cases, it was the city itself, with sufficient clout and money to do a good job. Americans are more inclined to spend their money on their private home entertainment centers than on the public spaces we all share. And in Paris as in Rotterdam, there's the lesson of comprehensive planning. Parkland and the activities that fuel it—shopping, culture, commerce, housing, parking—are thought of as inextricably intertwined. Each piece lives off the others. In Paris, another lesson is that if you want to make a city interesting, save what you can. A good city is a mix of memory and invention. The new and the old comment on each other. The character of the old Paris neighborhood, despite changes, is recalled by the artisan shops. And an old piece of infrastructure, instead of being demolished, is transformed by new uses. The city becomes a temporal collage, the collage of new wine in an old bottle. Both new and old are made more intense by the contact.

There are good recent parks in this country, too. But too often we ignore the lessons of Europe. Parks must be part of a larger design strategy, and they must be inventive—as inventive as Olmsted was in his day—unpredictable, even risk-taking. Sometimes I think we tend to focus too much on our Olmsted heritage. Olmsted's wonderful parks brought a piece of the countryside into cities in which the inhabitants were largely trapped. But within a few years, trolley lines and then automobiles offered most city residents access to the real countryside. (The original train at Viaduc des Arts was just such an excursion line, taking weekenders to the Bois de Vincennes.) In the city parks of this century, there's room for fresh, surprising ideas. ■

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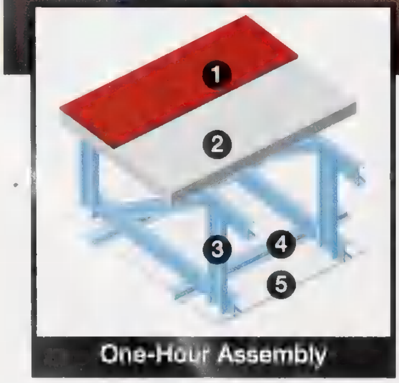

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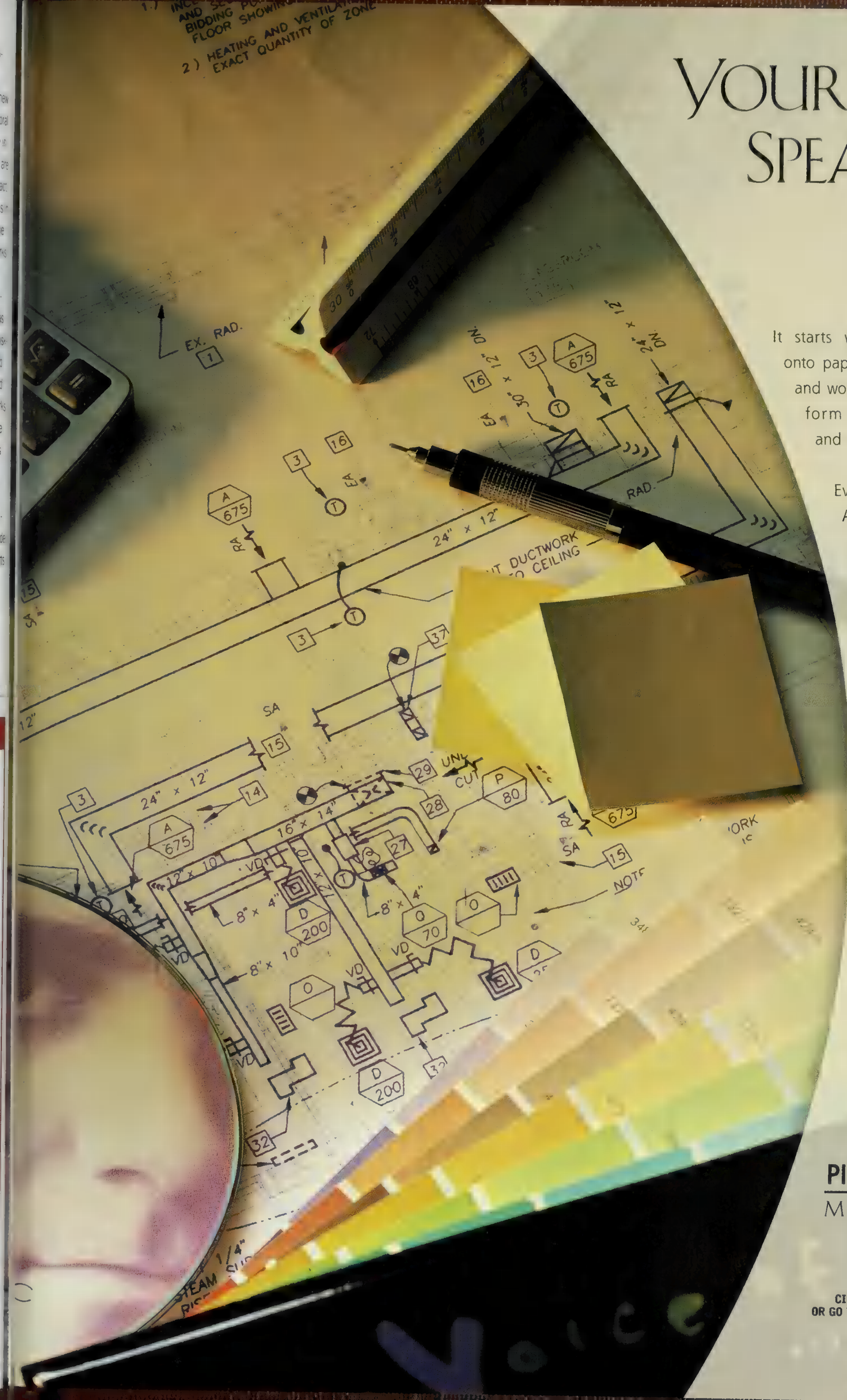

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New Canaan: Modernist outpost under siege

Commentary

By John Morris Dixon, FAIA

People who are paying $1 million or more for residential properties want more than 1,800-square-foot houses with 5-by-8-foot bathrooms. That's the crux of the threat faced by the remarkable aggregation of midcentury Modern houses in New Canaan, Connecticut.

Built when "functionalism" was still a mantra, these houses were intentionally spartan. Usually only one-story high, with interiors pared to essentials, they focused attention—through wall-to-wall glazing, patios, and terraces—on their typically wooded surroundings.

The strong market for "starter mansions" in this affluent community has conspired with the town's zoning regulations to put would-be restorers of these houses at a severe disadvantage. Allowable house sizes here are based on ground coverage—including covered outdoor areas measured to the "drip line" of overhangs. The majority of these Modern houses can be replaced as of right by taller structures that can have two to three times their interior floor areas. Conversely, if an owner wants to preserve one of the New Canaan Moderns and increase its living area by adding a complementary wing, ground coverage limits will in many cases be exceeded. Zoning based on the total usable floor area, as in several nearby towns, would make preservation of many more houses legally and economically justifiable.

John Morris Dixon, FAIA, is the former editor in chief of Progressive Architecture.

A nearly picture-perfect New England town, with white churches around its central green, New Canaan became a locus of Modern design almost by accident. Eliot Noyes, fresh out of Harvard's Graduate School of Design and working as director of the Industrial Design Department at the Museum of Modern Art, bought a site here for his own first house, completed in 1947. His rocky, wooded land, considered too challenging for conventional houses, was relatively inexpensive. He was soon followed by fellow GSD graduates Philip Johnson—who completed his famous Glass House in 1949—John Johansen, and Landis Gores, and their teacher at Harvard, Marcel Breuer. Dubbed the "Harvard Five," they lived and practiced for varying periods in New Canaan. (Noyes maintained a flourishing practice there till his death in 1977, and Johnson is still living there at 96.)

The five were responsible for 30 houses in the town, and architects who passed through their offices completed some 70 more before local demand for them petered out in the late 1960s. In the heyday of the movement, recalls John Black Lee, designer of eight local examples, both architects and owners hoped to transform people's lives, not just their tastes. "We were all involved in something experimental for the good of the world."

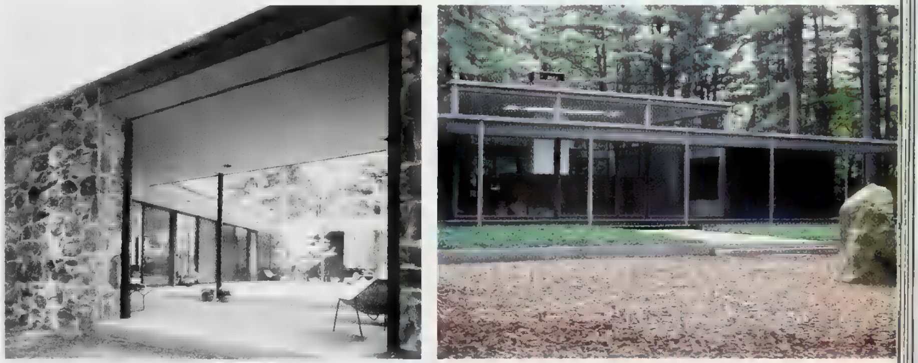
The houses generally hewed to the International Style, interpreted mainly in wood and fieldstone, with extensive glass. Roofs were variously flat or gently pitched. Many were assertively asymmetrical, often responding to slopes, with living areas in partially exposed lower floors. But some displayed the symmetry adopted by many in the 1950s, following the lead of Mies and Johnson.

The exceptional number of Modern houses in New Canaan, which had only about 8,000 people in 1950 (about 17,000 now), was widely recognized in the press. But the reputation of New Canaan as a hotbed of Modernism is a sobering indication of the minimal impact the movement had on house design; the Modern efforts never accounted for even five percent of the town's houses.

Starting in 1949, there were numerous Modern-house benefit tours that drew visitors from a wide area, but these ended in the mid-1960s, when owners became leery of crowds and publicity. Today, most New Canaan residents are unaware that the town was ever known for its Modern design. And, as in the 1940s, some consider these houses eyesores, disrupting the prevalent traditional New England imagery.

At least a dozen of the town's Modern houses have been demolished in recent years, including two by Johansen and two by Noyes. Meanwhile, two landmarks by Johnson (the Wiley and Boissonnas houses of 1956) have been carefully restored by enthusiastic owners. A 1956 house by John Black Lee has recently been subtly remodeled by architect Toshiko Mori, who has installed insulating glass (which almost all these houses need), increased the height of its raised central roof area, replaced rotting wood porch columns with stainless steel, and stained weathered walls dark. Lee admires these improvements.

Other architects have proposed ways to expand: Peter Gluck has designed an underground extension, exposed on the downslope side, which would leave another Lee house virtually untouched; Kaehler



Houses such as Eliot Noyes's, built in 1947 (left), and the 1956 house by John Black Lee, recently remodeled by Toshiko Mori (right), were built on rocky, wooded land that was considered too challenging for conventional houses.

& Moore have designed a harmonious second floor for a Noyes house that will appear to float above an 18-inch clerestory.

In 2000, the New York/Tri-State Chapter of DOCOMOMO (Documentation and Conservation of Buildings, Site, and Neighborhoods of the Modern Movement) organized a tour of several New Canaan houses. In collaboration with the New Canaan Historical Society (which sponsored a 2001 tour), DOCOMOMO has since launched a survey of the houses, with dozens of volunteers adding to the historical record on the subject.

Janet Lindstrom, director of the Historical Society and occupant of a 1962 Modern house designed by her husband, architect Gary Lindstrom, cites the potential of historic easements that can be established through The Society for the Preservation of New England Antiquities, the Connecticut Trust for Historic Preservation, or—just recently—the National Trust. For a fee, these organizations research the property and draw up legal agreements, which they then monitor. Because of the initial documentation and the monitoring, these easements are more effective preservation guarantees than deed restrictions, which can sometimes be ignored.

Local real estate agent Alice Jennings, who lives in a 1958 Modern by John Black Lee, explains the current economic bind. She may find potential buyers able to pay $500,000 to $800,000 for houses that probably need renovation, but too often the land alone is worth over $1,000,000 to buyers intending to demolish and build anew. What's more, speculative developers are attuned to the local market, ready to pounce the instant a property comes up for sale. Some owners have held out for buyers who mean to preserve their houses, but Jennings estimates that only a handful of the town's owners are willing to accept (or impose on their heirs) the financial penalty that comes with deed restrictions or historic easements. The ideal preservation-minded buyers, she says, are people without children, most likely from Manhattan, who can afford to put more than $1 million into buying and rehabbing a relatively small architectural jewel.

The town's first selectman (chief elected official), Richard Bond, expresses resistance to any landmark regulations or demolition delay rules that would interfere with the free market for house sellers and buyers. Instead, he offers assurance that he and the town's zoning officials will look favorably—and move quickly—on case-by-case zoning appeals, when the objective is the preservation and sympathetic expansion of Modern houses (notably 35 of them on an informally compiled list in his office). This does not, however, put would-be preservers on an equal footing with others ready to build anew under established zoning rules. And a sympathetic attitude among town officials, who may be gone tomorrow, is no match for regulations on the books.

The town's zoning regulations are now under review, but it is impossible to predict changes, if any. Given the small proportion of Modernism fans in the town, it is vital for them to make common cause with owners of the town's many fine houses of earlier periods, from Pre-Revolutionary to 20th-Century Tudor, which are also threatened in today's market.

A principal hope of those trying to save New Canaan's Modern legacy is the rising enthusiasm for 1950s design, as indicated by the proliferation of shops, Web sites, and magazines specializing in the period. Increasing interest in houses of this period may reverse the perception that Modern design means poor resale value, but that might not succeed in saving modest houses on $1-million-plus plots of land. ■

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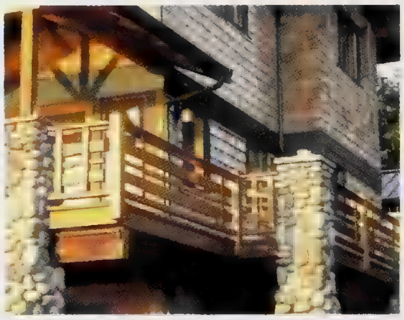
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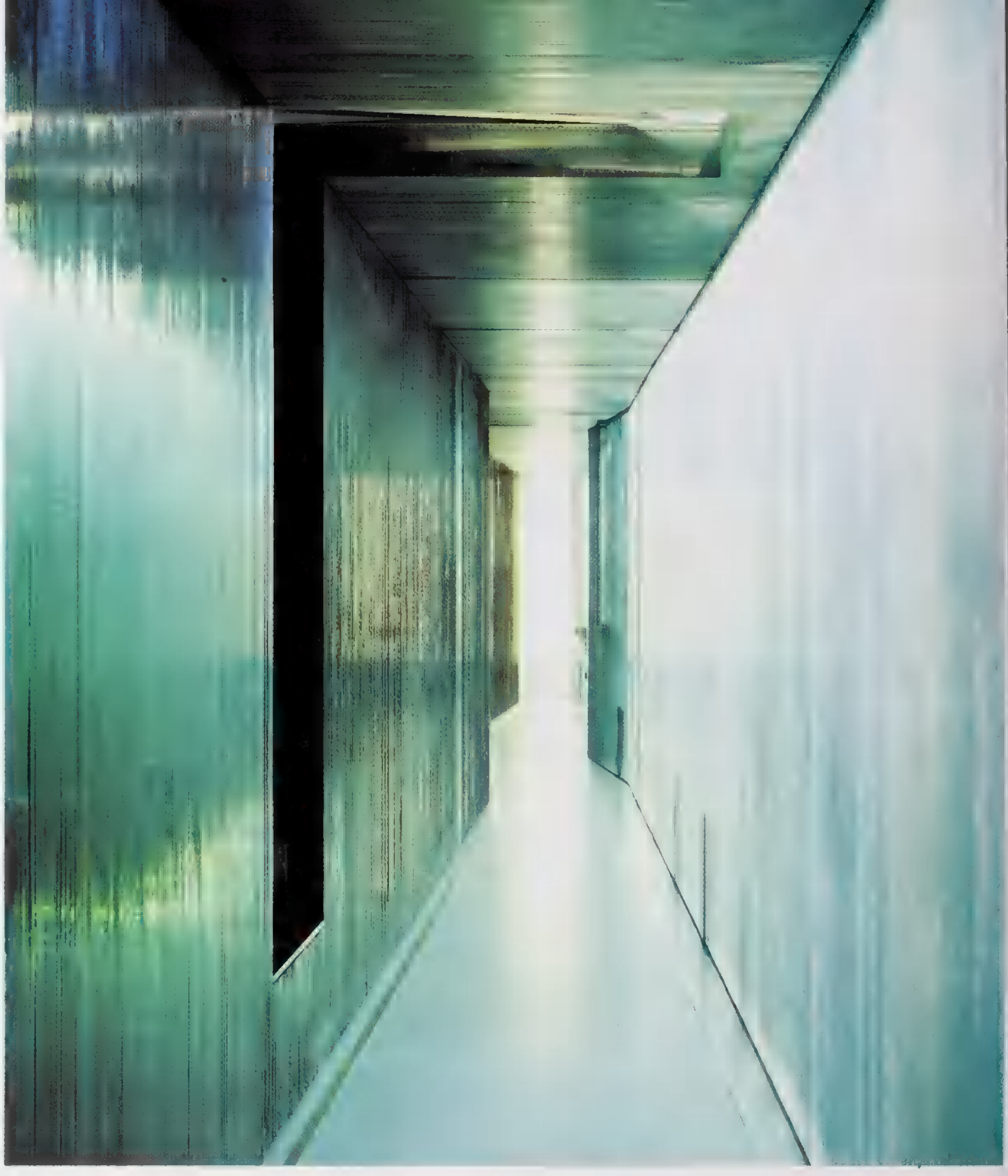
By Ingrid Whitehead

Living the laminated life, in a prototype house of glass

Much has been said about people who live in glass houses—less about the people who design them. The two young Dutch architects who designed the Laminata House in Leerdam, the Netherlands, bring to mind words like *radical*, as well as *heroic*, and maybe even *crazy*. Paul van der Erve and Gerard Kruunenberg have spent the past five years creating a wonder: A house with walls made entirely of glass.

The exorbitant and astonishing vision for the house began as an entry in a competition held by the Leerdam housing corporation CWL (Centraal Woningbeheer Lingesteden). Leerdam is known as the glass capital of Holland, and CWL wanted to mark their 40th anniversary with something unusual—a built house that would be both experimental and functional. An independent jury chose five designers from a pool of 160 entrants, and paid them to conceive a glass house whose plan would be embraced and then supported by the city council and local glass manufacturers. Van der Erve's plan won. But the city and the local glass industry said, "Not interested." CWL was committed, however, and the

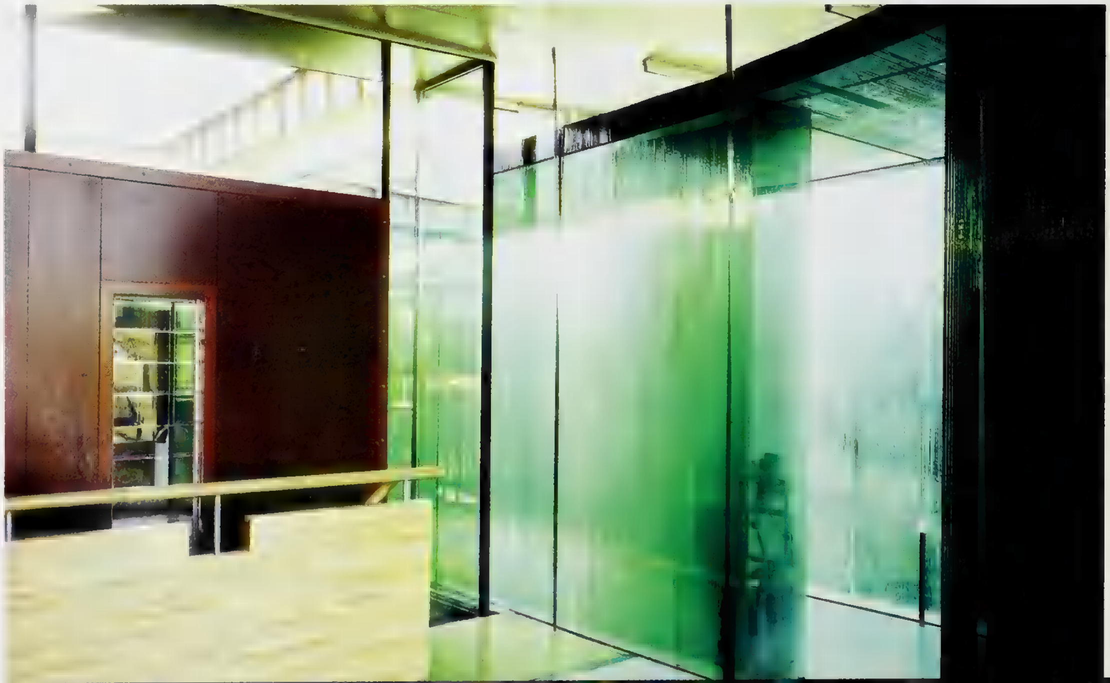


young, zealous architects figured they had nothing to lose. When multinational glass manufacturer Saint-Gobain agreed to collaborate on the project by developing and manufacturing the glass for a fixed fee, it was a go.

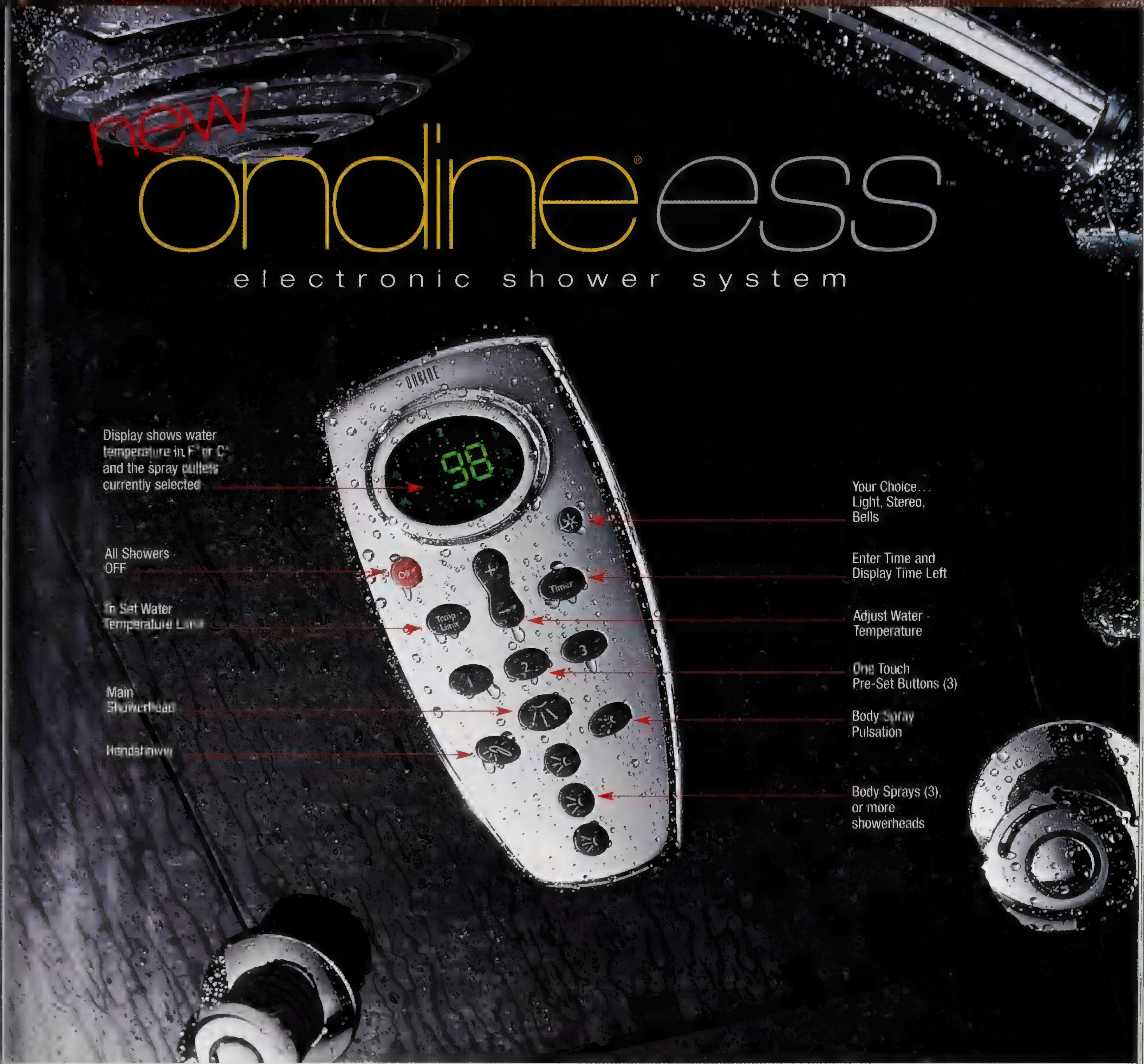
The concept was complex and unconventional. The architects envisioned a massive rectangular block composed of 450 cubic meters of glass formed by gluing together 13,000 glass plates. They then imagined cutting this laminated block cross grain to form two side wings of unequal depth. Carved out of these parts is a series of interior spaces that serve as the main rooms located along a central corridor.

The project was to be a groundbreaking study of the use of one material—glass. In practice, it was a grueling five-year process, resulting in a masterpiece that will not soon be recreated. Four years of extensive research commissioned by the architects and conducted by the Netherlands Organization for Applied Scientific Research (TNO) had to be undertaken to investigate how glass could be used as a primary building material. Questions about heating, ventilation, electricity, acoustics, and lighting had to be answered.

Once a doable, albeit arduous, design scheme was in place, the fabricating began on an unlikely site in a neighborhood on the outskirts of Leerdam, amid modest suburban homes. A temporary shed ("like a laboratory," says Van der Erve) was erected to maintain a controlled environment in which to build. All 13,000 panes of glass were cleaned



Daily life takes a daring turn when you live in rooms with walls of glass (below), especially along the house's startling, 20-meter corridor (above). The house is a monument to its primary element, and a study in contrasts. Here, a material that's delicate and fragile in a single transparent pane becomes as strong as concrete when a thousand layers of it are placed back-to-back.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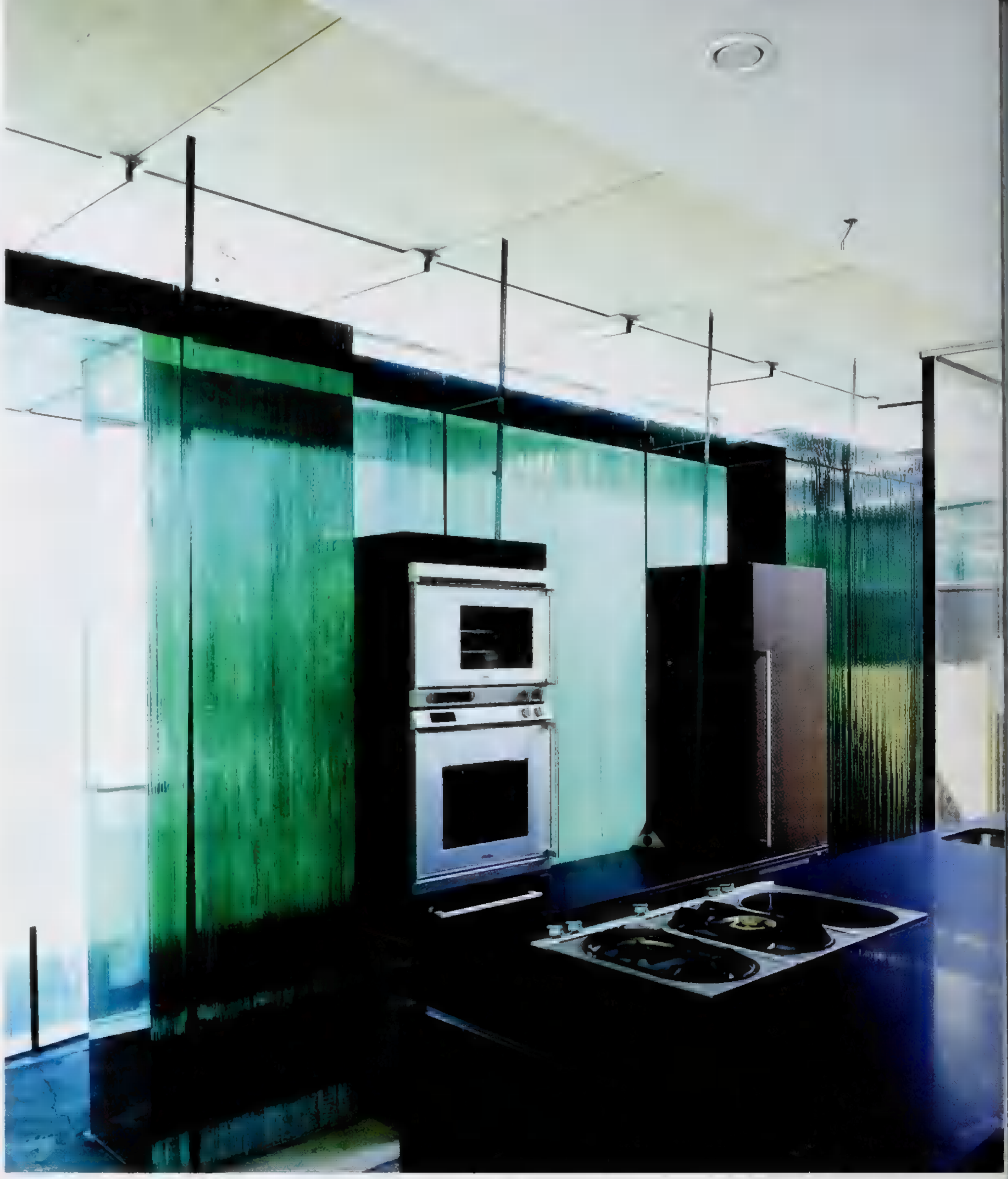
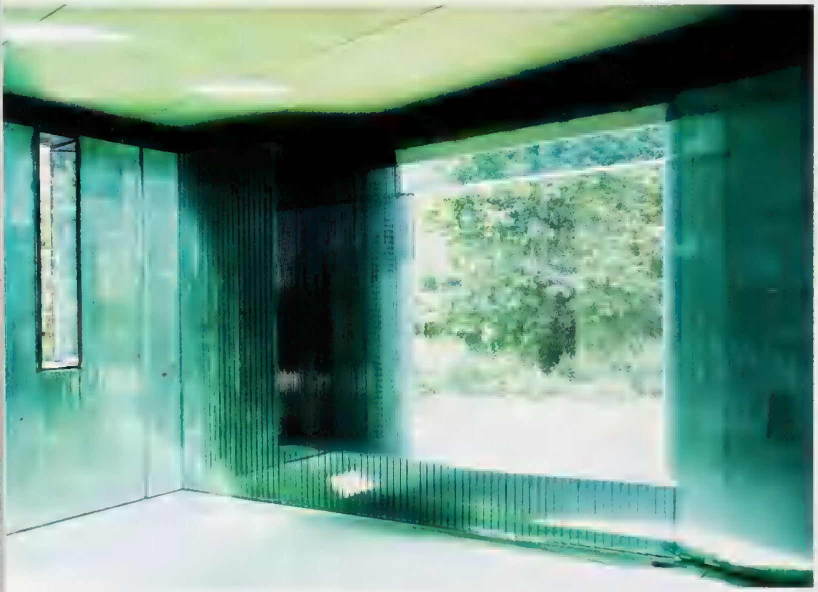


on the site, by hand, the sharp edges removed, and a special glue created by U.S. company G&E was rolled on before the panes were adhered to each other, one by one. The wall unit was then carefully set into a lip in the poured-concrete floor's edges. Because glass is naturally brittle, the inflexibility was countered by a UV-resistant silicon glue that provides some "give" to the walls as well as an almost 100 percent absorption rate and an almost 0 percent transmission rate. That said, the house had no need for air-conditioning. The glass walls' natural cooling properties, combined with heating in the concrete floor, creates perfectly monitored interior climates all year long. The problem of where to put cables was solved with a wireless electrical system that uses radio waves to operate lighting and some appliances, while stainless-steel boxes in some corners of the floors provide outlets for devices that can't be operated by remote control.

Because the views to the outside are extremely fragmented, what might have been a fishbowl is more like walking under a frozen waterfall. Inside, distorted visual sensations are especially intense when walking down the 20-meter corridor that runs the length of the house—murky visions of light and shadow punctured by the intense, brilliant sunlight that comes through the few vertical, slit windows scattered throughout the space. The need for a place in the house for future homeowners to escape inquisitive neighbors' eyes—silhouettes and shapes are visible from outside—led to the inclusion of a conventional basement in the core of the building. Its construction required a courtyard to be built above it, providing the center of the house with light and air.

Who would live in this quasi-aquarium? A couple—a painter and her retired husband—bought the house after construction for about $850,000. The painter uses the basement as her studio, and once a month she holds a "visiting day," when people are invited to view her paintings and the interior of the house. And they come in droves to experience something previously found only in dreams—a walk along a corridor of frozen rain. ■



In an unexpected juxtaposition, traditional appliances appear unconventional in the crystalline kitchen (above). It is also slightly shocking to see a single-paned window in a room (left) where the multiple-sheeted glass walls end.

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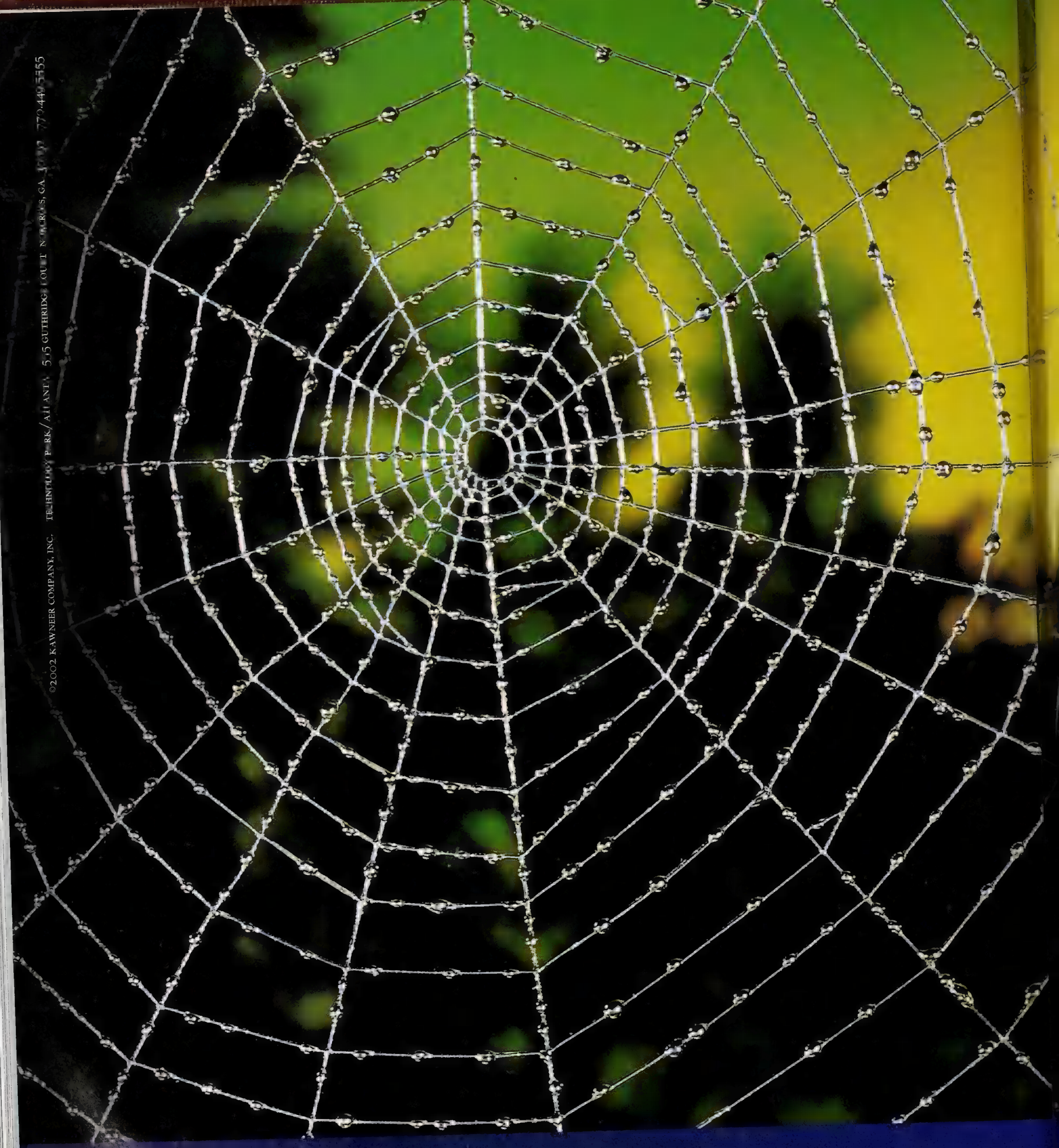

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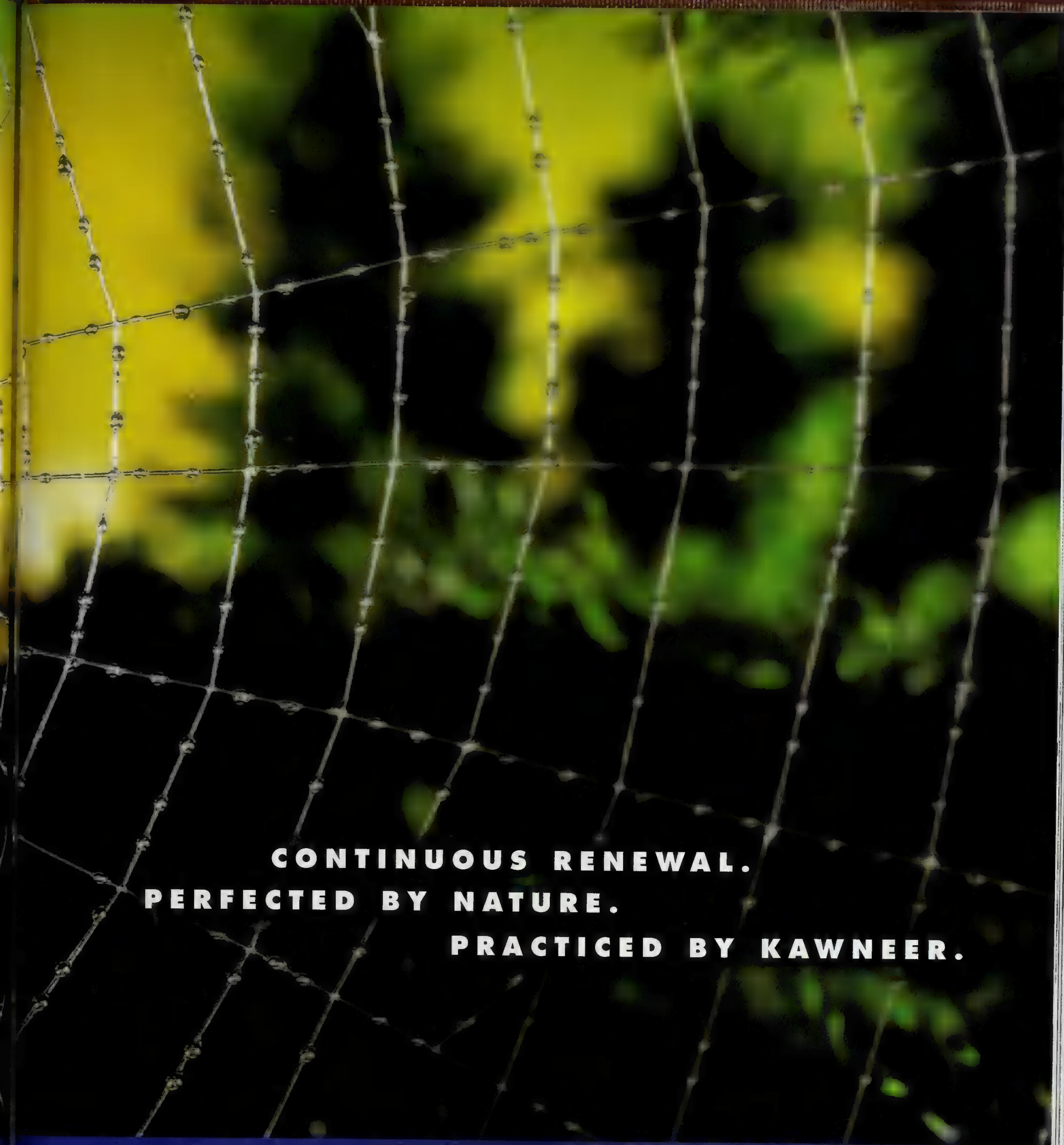

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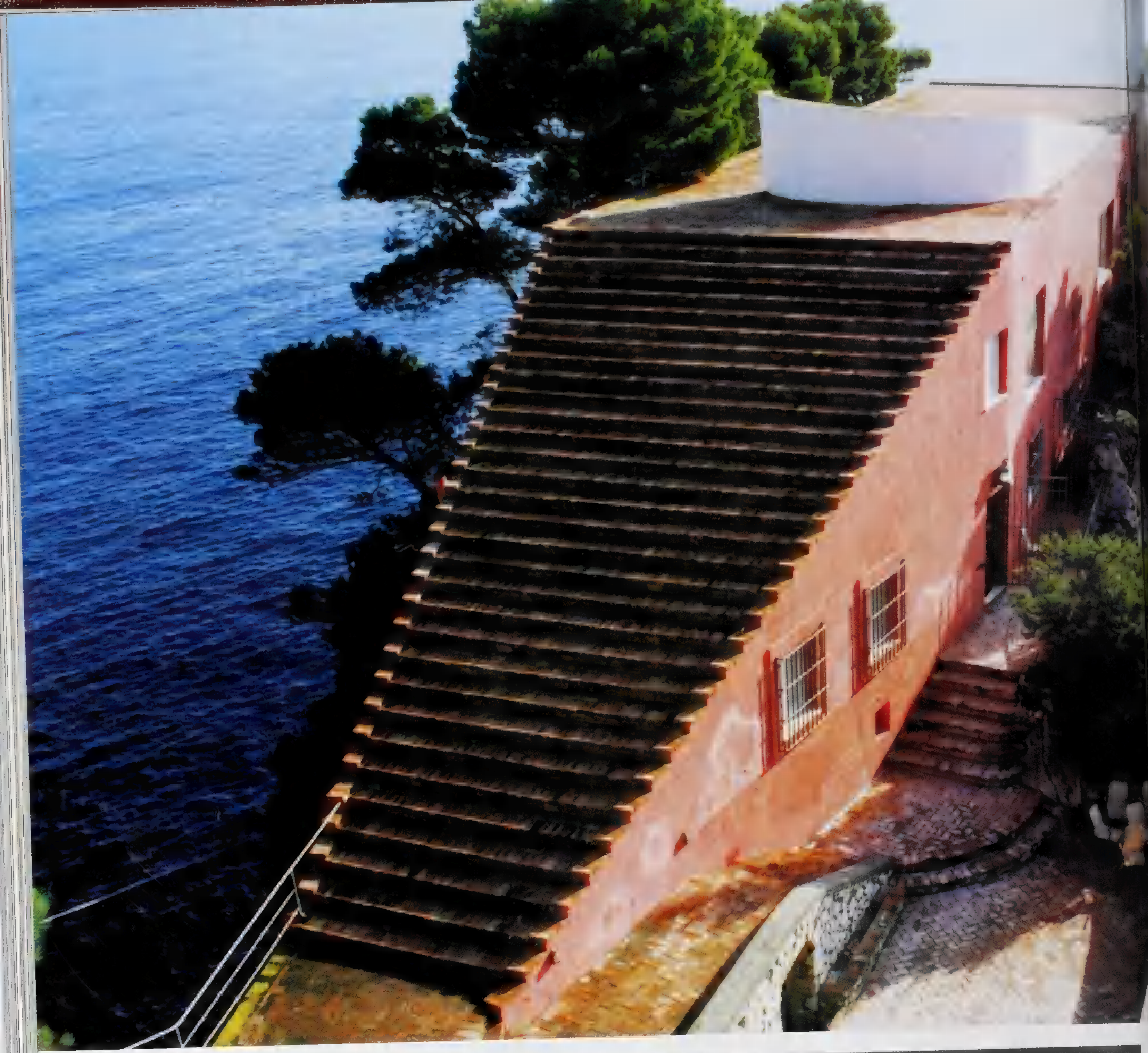

ADALBERTO LIBERA'S 1940 CASA MALAPARTE, on the island of Capri (above), appeared prominently in Jean-Luc Godard's 1963 film *Contempt*, starring Brigitté Bardot and Michel Piccoli (opposite, top). The house's dramatically stepped roof terrace provided a highly cinematic venue.

NEUTRA'S 1953 F.W. SCHAARMAN HOUSE, in Los Angeles, was the setting for *Anniversary Party* of 2001, directed by Alan Cumming and Jennifer Jason Leigh.

BELZBERG/WITTMAN'S 1996 HOUSE in Malibu (opposite, bottom) set the ominous scene for Daniel Sackheim's 2001 *Glass House*.

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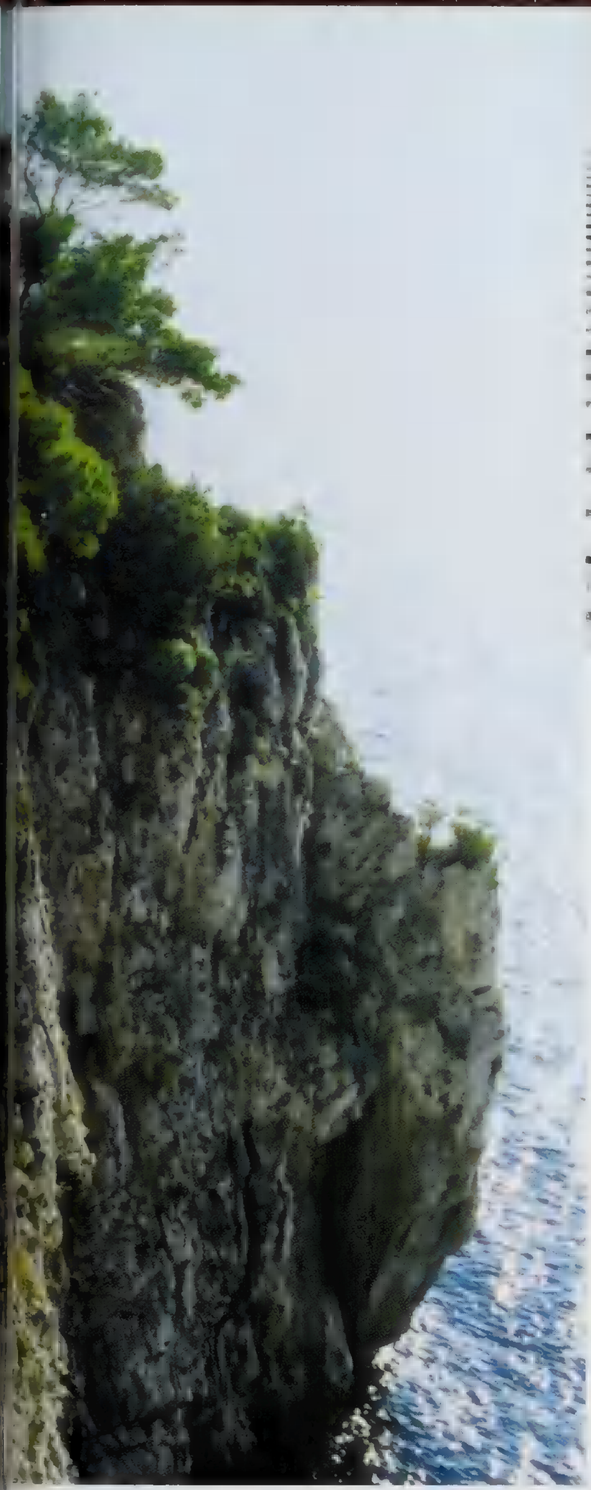


Movie Houses

Modernist homes, in star or cameo roles, grace the silver screen

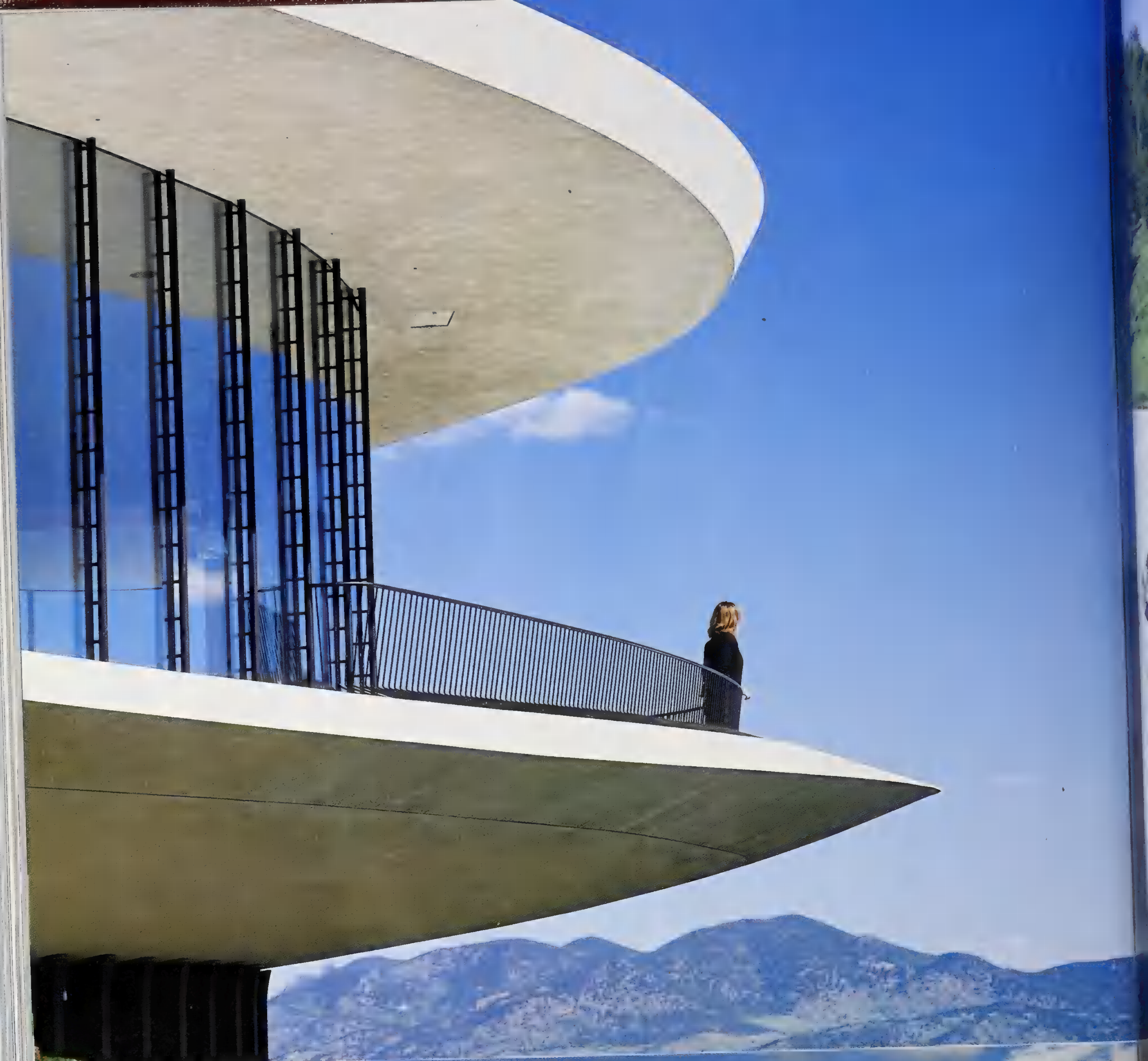
By Thomas Hine

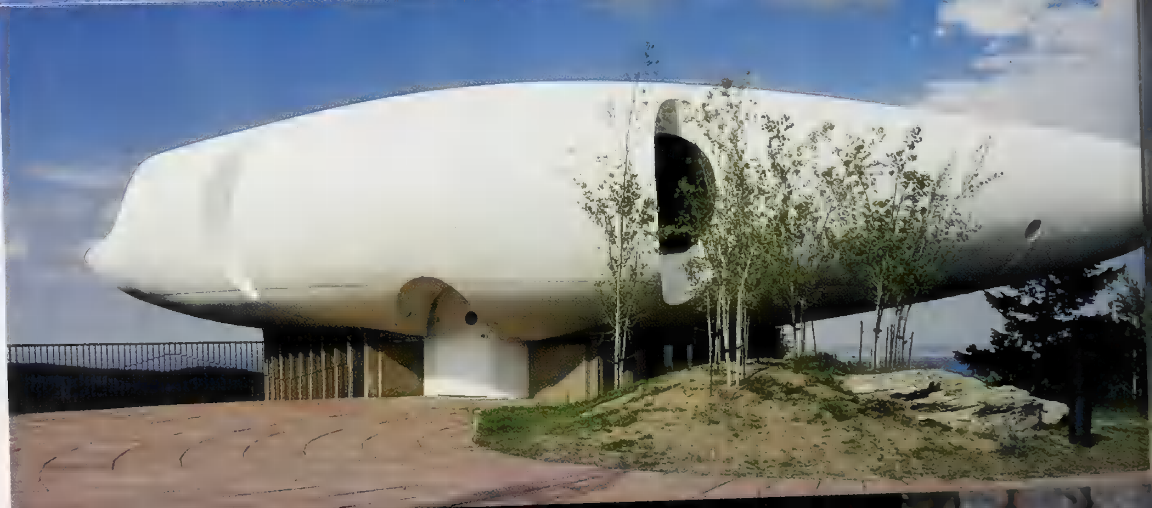
In the movies, people who live in glass houses usually have something to hide. That was certainly true in last year's *Glass House*, a slightly trashy teen-oriented thriller, in which the title role was played by a luxurious, nervously Modernist 1996 residence, designed by Belzberg/Wittman Collaborative, that juts out from the Malibu coast. In the film, the house's sleazy, drug-addled owners resort to embezzlement and murder to pay for this extreme domestic indulgence.

And in last year's *Anniversary Party*, Richard Neutra's 1953 F.W. Schaarman House provides a pristine, crystalline setting, where a seemingly ideal couple goes awry in the company of glamorous, screwed-up friends and neighbors. This film follows the rule that any house that appears perfect in the early scenes will be a mess by the end.

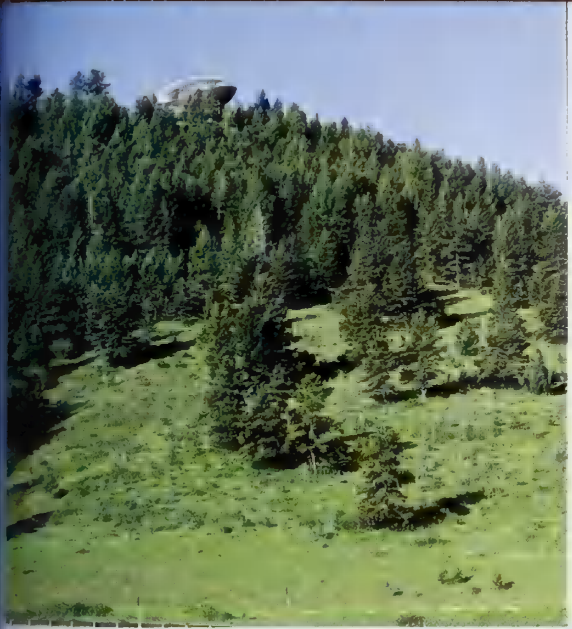
The house in *Glass House* is often shown in the film obliquely from below, menacing like a haunted place, whereas the one in *Anniversary Party* appears mostly in close-ups, creating a feeling of intimacy and, in effect, bringing the viewer into the party. Different as these films are, you could say that in both the true stars are the houses, each embodying a distinctive sense of precarious-

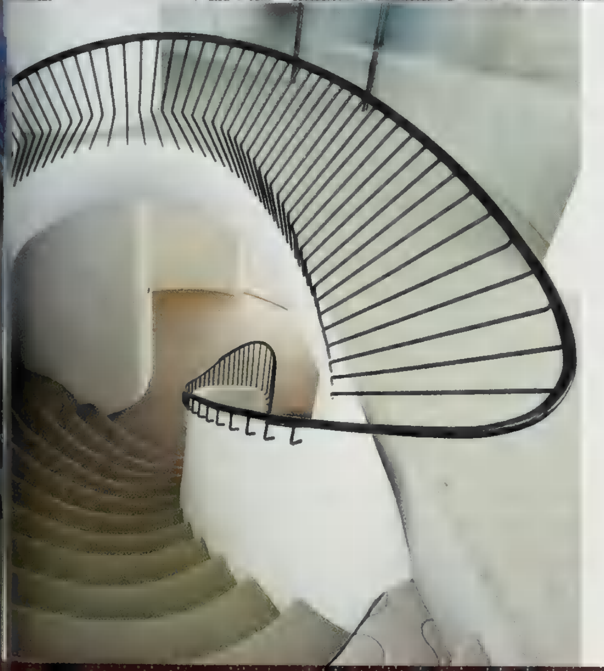
Thomas Hine was The Philadelphia Inquirer's *architecture critic for 22 years. His book* Want That! How We All Became Shoppers *comes out this fall.*





CHARLES DEATON'S SCULPTURE HOUSE, in Genesee, Colorado, appeared in Woody Allen's 1973 *Sleeper*. Deaton designed the house for himself but built only its shell, in 1963–65. It was completed (and renovated) in 2001 by Praxis, with interiors by Deaton's daughter, Charlee.





ness. The houses seem clear, but they conceal secrets. Glass can shatter. So can lives.

Films rarely concentrate this obsessively on a house, where it becomes possible to draw a plan and, in the case of *Glass House*, a section. But modern houses have long played an important role in the movies. They most often appear not in starring roles but in cameos, showing up briefly, but memorably, to alter the mood or help define a character. In films where architecture does dominate, such as Terry Gilliam's 1985 *Brazil* (which wittily presents work by Ricardo Bofill) and Ridley Scott's 1982 *Blade Runner*, it often describes a nightmare vision. Design buffs find such films cool, but nobody would want to live in the worlds they predict.

Glimpses of notable Modernist houses flash by in everything from art films to kung fu slugfests. One must be alert, because they appear without warning, often with improbable furnishings. And unlike, for example, the people who deliver sandwiches to the set, the houses are hardly ever identified in the credits.

While it's fun to spot famous houses on-screen, in most movies they exist merely to explain or challenge the central characters. Modern settings, in both film and real life, are exceptional. You notice them. And if you notice the building or its interior in a film, it usually means the protagonist faces a threatening, or at least unfamiliar, situation.

Moviemakers tend to use Modern houses to communicate feelings other than those intended by the architects. While the ideology behind these buildings celebrated freedom and flexibility, light, and air, Modern houses in the movies are often identified with sinister characters and arbitrary power. (Many of James Bond's enemies share a taste for high-tech Modern.) They are often uncomfortable places whose Minimalist decor is associated with controlling personalities.

The same house can turn up in many guises. Frank Lloyd Wright's 1924 concrete-block Ennis House served as the exterior of Vincent Price's 1958 thriller *The House on Haunted Hill* and later epitomized Hollywood's potent culture of fantasy in John Schlesinger's 1975 *The Day of the Locust*, based on Nathanael West's novel. In *Blade Runner*, its Mayan motifs were expanded into a dark, futuristic-primitive cityscape. It even appeared in Ridley Scott's 1989 *Black Rain*, a movie that supposedly takes place in Japan.

LA Confidential, Curtis Hanson's 1998 film set in the early 1950s, makes striking use of Richard Neutra's 1929 Lovell (Health) House. That great white hillside edifice was originally built to demonstrate ideas about healthy living through openness, ventilation, and indoor-outdoor design. In the film, the house takes on a nearly opposite meaning. As the home of a real estate developer who runs a prostitution ring and blackmails his customers, it seems the very source of evil. The house's abstract quality helps establish the character as remote—not someone with whom the viewer can easily identify. Only with the last scene in the house does one sense that it might actually be a wonderful place, but by that time the viewer might be distracted by the owner, sitting dead in a chair in the living room, his wrists bleeding onto the off-white carpet.

MODERNIST HOUSES FLASH BY IN EVERYTHING FROM ART FILMS TO KUNG FU SLUGFESTS.

It turns out that the developer-pimp is only working for a more important villain, a friendly fellow who resides in a warm, cozy bungalow. Still, the association of powerful villainy with High Modern houses is a strong enough tradition that Hanson could use it to manipulate the audience's expectations.

As early as the 1920s, film sets in Europe and America sometimes reflected archi-

JOHN LAUTNER'S 1968 ELROD HOUSE, in Palm Springs, California, was featured in the 1971 James Bond film *Diamonds are Forever* (above and right).

tectural ideas that had scarcely been realized in the real world. Until the late 1950s, most films were shot on soundstages, and some modern domestic settings—ranging from the opulent, streamlined interiors of the Astaire-Rodgers musicals to the terrifying avant-garde lair of the mad architect played by Boris Karloff in *The Black Cat* (1934)—existed only in the movies. (Karloff portrayed the architect as sinister but extremely stylish, an austere dandy with some of the elegantly authoritarian mien of, say, Paul Rudolph or Philip Johnson.)

Once filming on location became routine, Hollywood filmmakers discovered that the 30-mile radius of the intersection of Beverly and La Cienega Boulevards—the so-called "zone" where lower union rates apply—offered the world's greatest concentration of Modernist houses.

And to a lesser extent, famous houses outside of Hollywood have also had their movie-star moments. Even Le Corbusier's 1930 Villa Savoie played a bit part as the scene of a seduction in *French Postcards*, a 1979 film about American teens in Paris. In Jean-Luc Godard's 1963 *Contempt*, Jack Palance, cast as a boorish American film director, declares, "Gods—I like them very much. I know exactly how they feel." His house, played by Adalberto Libera's amazing 1940 Casa Malaparte, atop a crag in Capri, provides a suitably superhuman setting for a memorable monster.

Brian de Palma's 1984 *Body Double* gives architecture buffs the opportunity to get inside of John Lautner's famed 1960 Chemosphere (Malin) House. A favored film and television location, it's an unlikely hybrid of flying saucer and watchtower that seems to embody California freedom. And for the film's protagonist—a clinically claustrophobic actor having difficulty with his role as a vampire—the house's openness and views seem an antidote to his demons. Yet the film, with its many shots of interiors glimpsed through windows and of fish in aquariums, ultimately presents the Chemosphere and other glassy houses as places of confinement, not liberation.

The architectural star of *Glass House*, with its marble floors, complex, multilevel spaces, and high-tech kitchen—where its residents heat their take-out dinners—seems a perfect embodiment of 1990s excess, some of which, we now know, was made possible by juggling the books. Thus, from the start, the audience is suspicious of its shifty owners, who happen to be named Glass.

The style of the house is significant, and its impact clearly geared toward a target audience. The children, who are *Glass House*'s protagonists, are orphaned within the first few minutes of the film and forced to leave the home in which they grew up. It, too, appears quite expensive. But, with a mantel, moldings, white picket fence, and other traditional trappings, it is "homey"—a place that much of the general audience might aspire to own. By contrast, the hard-edged Glass house might engage architects' eyes, but in the context of its story and its teenage target audience, the change of scene is like a plunge into an icy swimming pool, making it the dream house of just a tiny minority. Likewise, some members of the audience might find the calamari and risotto that Mrs. Glass serves the children at their first meal appealing, but it was clearly intended to evoke a collective "yuck!" from the teens in the theater. The camera loves clutter, and ultraclean, modern interiors come across as life-denying. In Joseph Ruben's 1991 *Sleeping with the Enemy*, Julia Roberts begins to discover that she has married a villain by observing that he cares more about the neatness of his modern house than he does about her.

JOHN LAUTNER'S 1960 CHEMOSPHERE (Malin) House, in Los Angeles, provided a sinister setting for Brian de Palma's 1984 *Body Double.*

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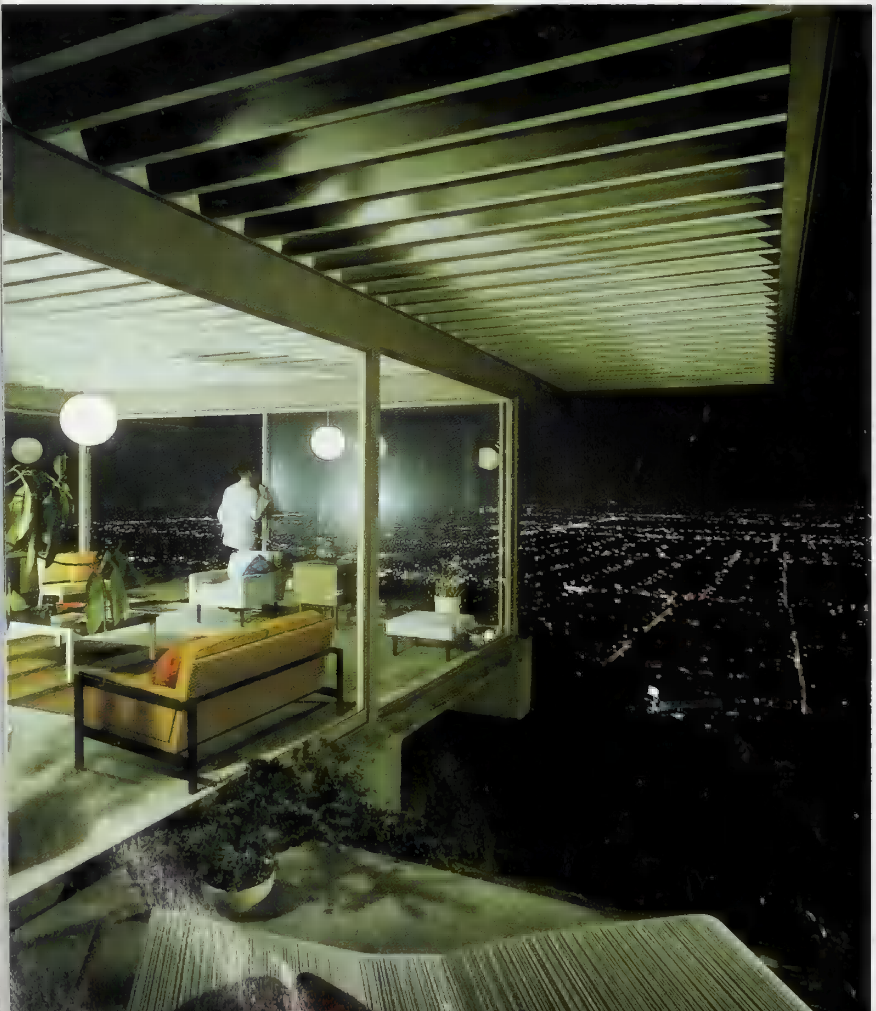
NEUTRA'S 1929 LOVELL (HEALTH) HOUSE (above, left and right) is the home of a villainous developer-pimp in Curtis Hanson's 1998 *LA Confidential*.

PIERRE KOENIG'S 1960 CASE STUDY HOUSE #22, as portrayed in the classic Julius Shulman photo (below), appeared in Neil LaBute's *Nurse Betty*.



This theme carries through even into comic films. In Jacques Tati's 1958 *Mon Oncle*, the director creates a cartoon of a Modern house, complete with two round windows that evoke Le Corbusier's eyeglasses. Its residents are hilariously incompetent in their use of the house's perverse technological "conveniences," but, more seriously, the house forces them into lives that are pretentious and antisocial.

In *Sleeper* (1973), Woody Allen used two real houses in Colorado, Charles A. Haertling's 1969 Brenton House and Charles Deaton's 1960s unfinished house for himself, to conjure up an alienating, dictatorial, though very funny, future, in which the health benefits of deep-fat frying are, at last, understood, and people take their pleasures in the orgasmatron, a device inspired by Deaton's cylindrical space-age elevator shaft. As a man displaced from 1973 to 2173, Allen portrays one of the most familiar movie archetypes: the fish out of water. The alien environments in which such figures find themselves often include Modern houses.

In Neil LaBute's 2000 *Nurse Betty*, Renee Zellweger plays a fish who doesn't know she's out of water: a midwestern housewife, traumatized by witnessing her husband's murder, who believes she is a character from her favorite TV soap opera. She leaves her overfilled tract house and goes to Los Angeles, where she meets the handsome lead actor from the soap.

IN "SLEEPER," THE CYLINDRICAL ELEVATOR SHAFT FROM A CHARLES DEATON HOUSE BECOMES THE ORGASMATRON.

He takes her to his home, which turns out to be Pierre Koenig's 1960 Case Study House #22 (Stahl House). In this place, best known through the classic Julius Shulman photograph in which it appears to float above nighttime Los Angeles, we see the character in a new light. The Shulman image is briefly recreated in the film. No longer the country-mouse housewife, she becomes as fully glamorous as the house itself. Both the character and the audience are pleased to discover that she fits into this alien setting. This dream house seems to validate the character's dream world. The famous Modern house is not evil but exhilarating. It's a thrill to be there, and through its open spaces, one can see fabulous possibilities.

A moment like this suggests the promise and the power of architecture. And we like to think that Modern houses can in real life evoke pleasure and excitement. But such moments happen rarely—at least on the silver screen. ■

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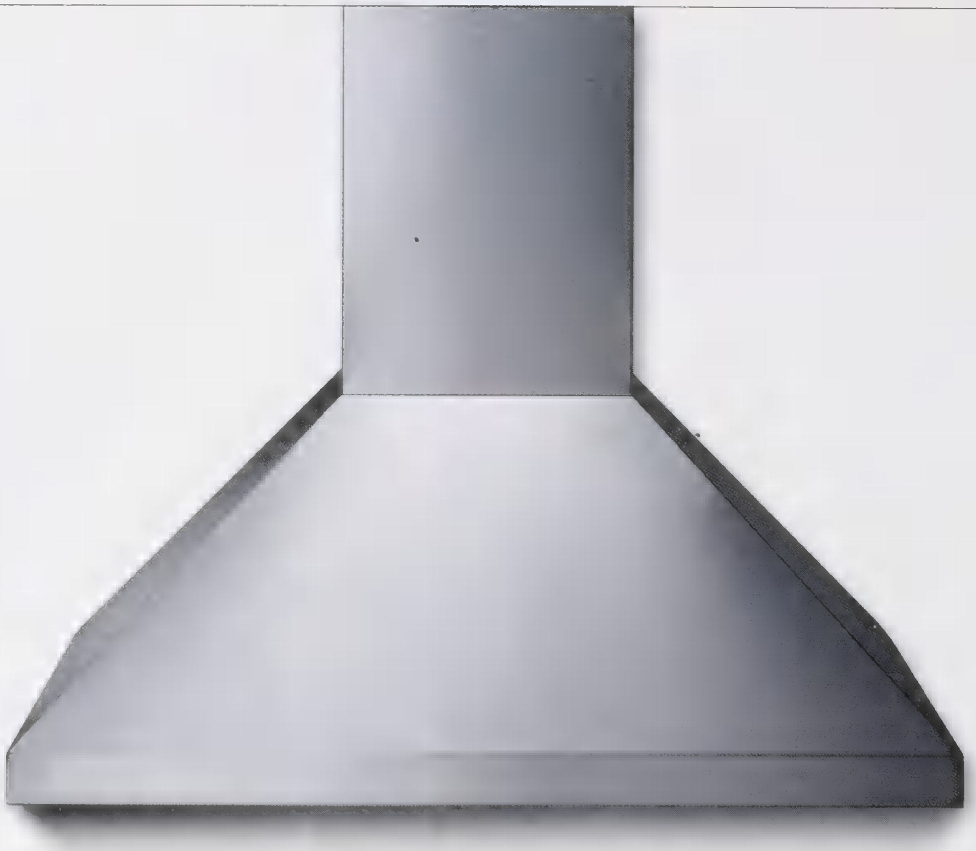

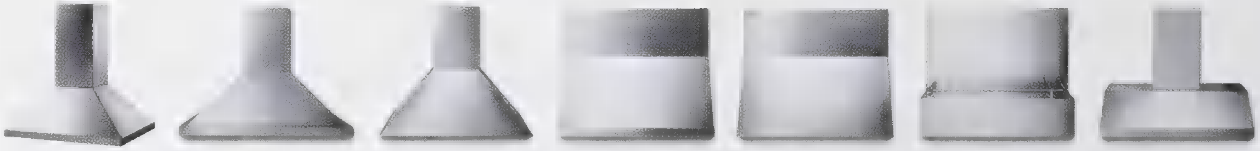

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Record Houses 2002

A house can hide secrets about itself. The face it shows to strangers may mask unsuspected personality traits, concealing its true size and character, its inner nature, perhaps even an entire realm behind it. For a single-family house—a private home—to function successfully within a more public domain, balance, or productive tension, is necessary between its outward and more inward demeanor, between its relatively accessible and inaccessible zones. We were struck by the expression and resolution of this condition in the projects selected for this year's Record Houses.

Public-private contrasts were most immediately apparent in the buildings in, or near, urban areas. Jim Jennings's Howard Street House, for example, which fronts a slightly gritty San Francisco street, ingeniously introduces a camera obscura effect—produced by a facade of perforated Corten steel backed by translucent glass—to bring aspects of the street life literally and figuratively inside. Between party walls, the facade's huge translucent window conveys openness, yet preserves privacy, giving no hint of a hidden courtyard.

Patkau Architects' Vancouver House is also sited with close lateral adjacencies, but without party walls. To channel lines of sight toward spectacular views, the Patkaus set the interior between long concrete walls. The exterior barely suggests the sectional complexity within. At the front door, a glass-bottomed pool is partially visible, hovering overhead. This is just the beginning.

In Stratford, Canada, Shim-Sutcliffe's Tower House, a tiny cement-board-clad structure amid far more towering urban neighbors, conceals a light-filled, three-story, fir-lined atrium at its core. The atrium balconies, reminiscent of an operating theater, overlook a cooking-school kitchen. Only the facade's wooden mullions offer a clue to the interior, and the entry ramp belies the home's more public component.

Gradually uncloaking its own inner realm, Adriá + Broid + Rojkind's F-2 House, near Mexico City, engages a language of walls and a sequence of thresholds. With a very different architectural vocabulary, Daly, Genik's Beverley House in Santa Monica, California, appears from the street, among modest structures, much smaller and more enclosed than it really is. Similarly, Jacques Moussafir's Stein-Fleischmann House, near Paris, takes on an expansive lightness and luminosity on its interior that is hard to imagine from the discreetly cubic exterior.

In the wide open countryside, public and private issues are less obvious. But the two rural houses we've included, Cutler Anderson's Reeve Residence and Shim-Sutcliffe's Island House, were both designed to disclose themselves slowly. Both are "camouflage houses," with planted roofs that seem, at first glance, to blend with their settings.

All our featured projects finally reveal that even in this year of tragedy, houses—with their complex personalities—continue to be places of comfort and optimism. ■

1. **Patkau**
2. **Jim Jennings**
3. **Cutler Anderson**
4. **Adriá + Broid + Rojkind**
5,6. **Shim-Sutcliffe**
7. **Daly, Genik**
8. **Moussafir**

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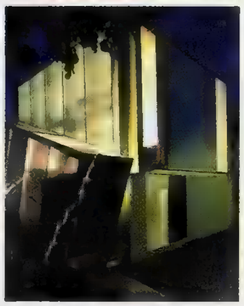

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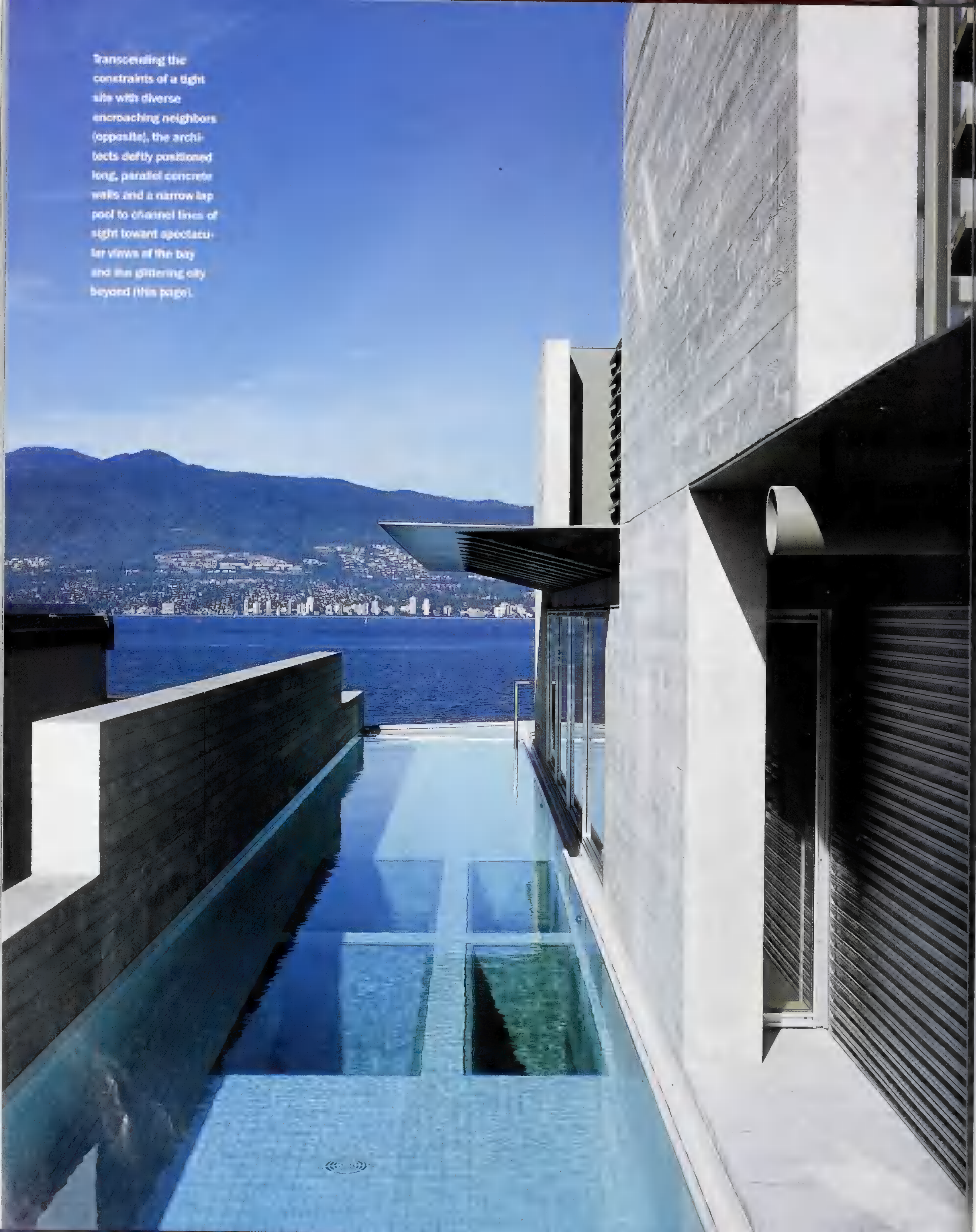
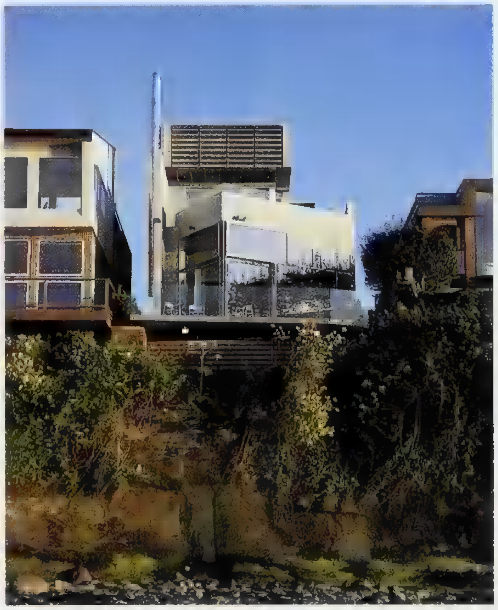


Transcending the constraints of a tight site with diverse encroaching neighbors (opposite), the architects deftly positioned long, parallel concrete walls and a narrow lap pool to channel lines of sight toward spectacular views of the bay and the glittering city beyond (this page).

Patkau Architects cast dappled light into its VANCOUVER HOUSE through the glowing prism of a glass-bottomed pool

By Sheri Olson, AIA



Dreaming out loud. That's all it really was. But, in response, Patkau Architects moved heaven, earth, and 50 tons of water to fit a lap pool onto an impossibly narrow site in Vancouver. "We found out later that it was an incidental request—if we had protested vehemently, the client would have dropped it," says John Patkau. Instead, water became the catalytic element in a precisely calibrated design. To fit the pool onto the 33-foot-wide site, partners John and Patricia Patkau had it hoisted 10 feet in the air, above the entry walkway. Glass panels in its bottom act as lenses, refracting light inside the house in flickering, aqueous patterns.

The 60-foot-long outdoor pool runs along the west side of the rectilinear house, with spectacular views north across English Bay to the city's glass towers and the verdant Coast Mountains beyond. As light filters through the pool's water and glass panels, a swimmer can see who is directly below at the front door, and vice versa. "The view through 4 feet of water is surprisingly transparent," says John Patkau. "It appears only 6 inches deep."

Transparency and light play against opacity and solidity throughout the 3,071-square-foot house. Suspending a pool above grade required a reinforced-concrete structure for lateral stability in the event of an earthquake. The architects devised an exposed concrete frame that braces the house's walls on the interior and extends outdoors, forming a cantilever to cradle the pool. Two parallel planes of board-formed concrete, a mere 16 feet apart, define the building envelope, providing privacy from encroaching neighbors, only inches away on either side. Here in Kitsilano, a rapidly changing Vancouver suburb, waterfront real estate is at a premium, leading to exceptionally tight sites where high-end residences rub shoulders with older ramshackle cottages.

Given Vancouver's damp, gray climate, the Patkaus were concerned about concrete's potential for gloominess, and so they developed a special mix that is denser and whiter than usual. The resulting high-quality concrete stays bright even on the dreariest days and provides a neutral backdrop on the interior for the lush play of light. With the material's serenity, John Patkau explains, "We tried to respond to the visual overkill of daily life."

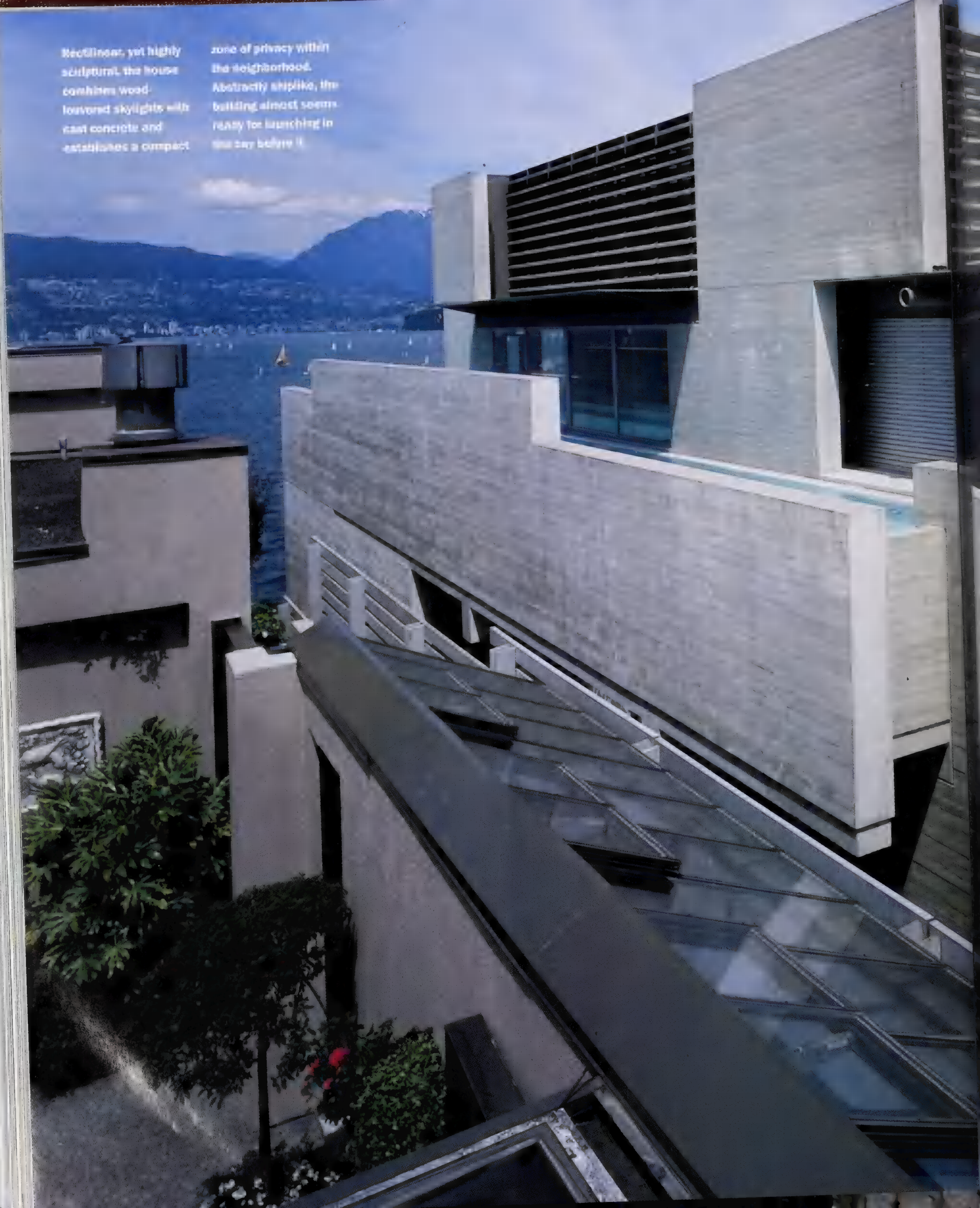
Although this house for a single, Hong Kong–based businessman may appear simple in plan, a CAT scan would reveal a dramatically different section every few feet. The actual distribution of program is straightforward: living and dining spaces on the ground floor, a bedroom and study on the second level, and a music room below grade. But the site's lateral constraints inspired the Patkaus to manipulate the volume vertically, giving the space expansive and varied qualities within its 1,540-square-foot, long, narrow footprint. As John Patkau puts it, "The result is both minimal and baroque." Baroque—in the sense of experiential richness and complexity—is an understatement for the interpenetrating spaces, layered planes, and dappling light that change throughout the day and the seasons.

A long section through the house would reveal a cascade of cantilevered concrete steps down to the main living space and its panoramic view. The constancy of the exterior side walls—working almost like blinders to channel lines of sight—provides a foil for the house's ever-changing section. The living room's prowlike glass walls heighten this effect and project out toward the water, tending to merge the interior space with the English Bay before it. Oversize glass doors slide open to a deck 40 feet above the rocky shoreline.

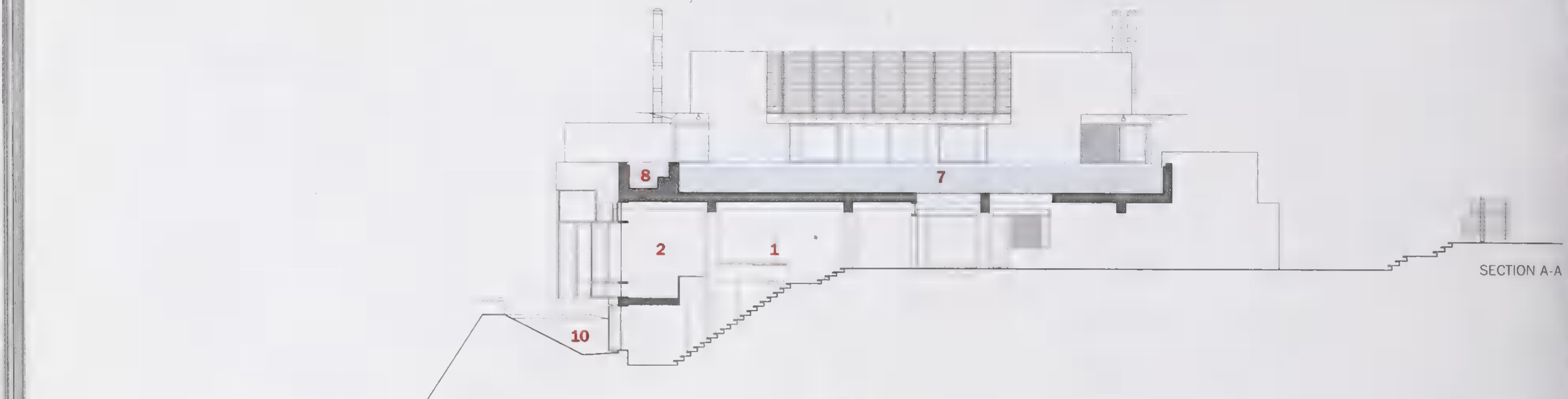
A few steps up from the living room, to the south, a transverse cut would lay bare other major sectional variations. Here, the landlocked dining area expands skyward as its ceiling angles up 20 feet to a giant clerestory window. Its wooden louvers temper western rays, while directly below the clerestory, a light shelf over pool-level windows bounces flecked

Sheri Olson, AIA, RECORD*'s Seattle-based contributing editor, is author of* Miller/Hull *(2001) and architecture columnist for the* Seattle Post-Intelligencer.

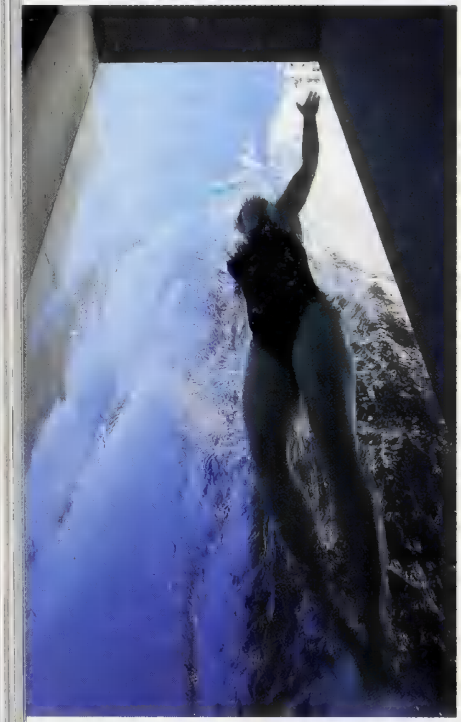
Project: *Vancouver House, Vancouver, British Columbia*
Architect: *Patkau Architects—Michael Cunningham, John Patkau, Patricia Patkau, Peter Suter, Brian Wakelin, Joanne Gates, Craig Simms, Kathleen Robertson, Dohhee Zhoung*
Engineer: *Fast & Epp Partners*
Consultants: *SLS Lighting; The John White Woodshop Company*
General contractor: *Glover Corporation*



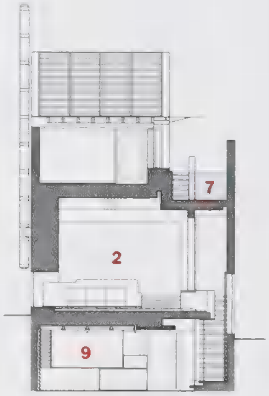
Rectilinear, yet highly sculptural, the house combines wood-louvered skylights with cast concrete and establishes a compact zone of privacy within the neighborhood. Abstractly shiplike, the building almost seems ready for launching in the bay before it.



SECTION A-A



1. *Dining*
2. *Living*
3. *Kitchen*
4. *Garage*
5. *Bedroom*
6. *Study*
7. *Lap pool*
8. *Hot pool*
9. *Music room*
10. *Light well*
11. *Balcony*
12. *Deck*



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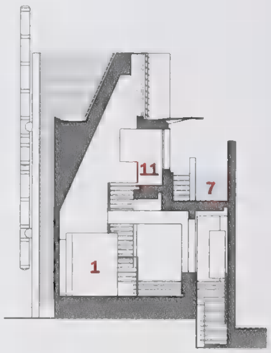

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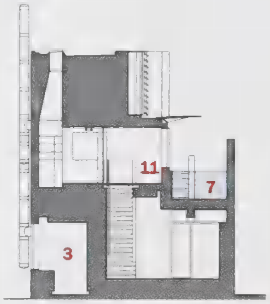

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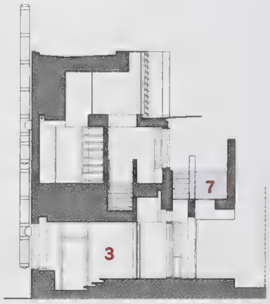

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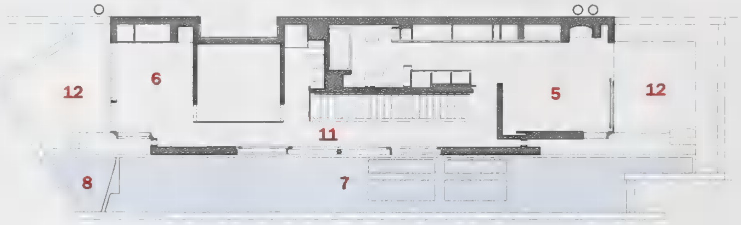
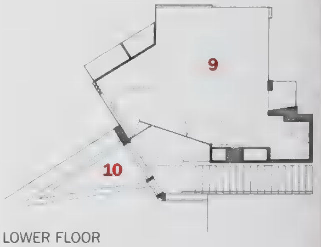
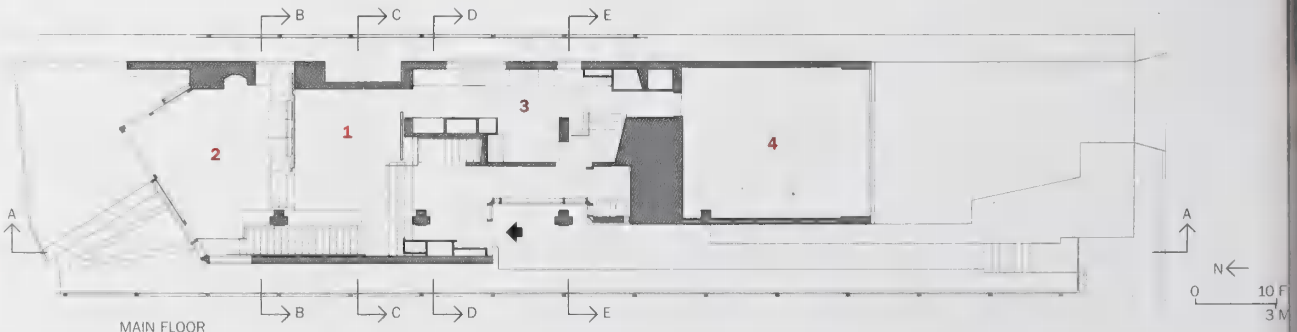


UPPER FLOOR

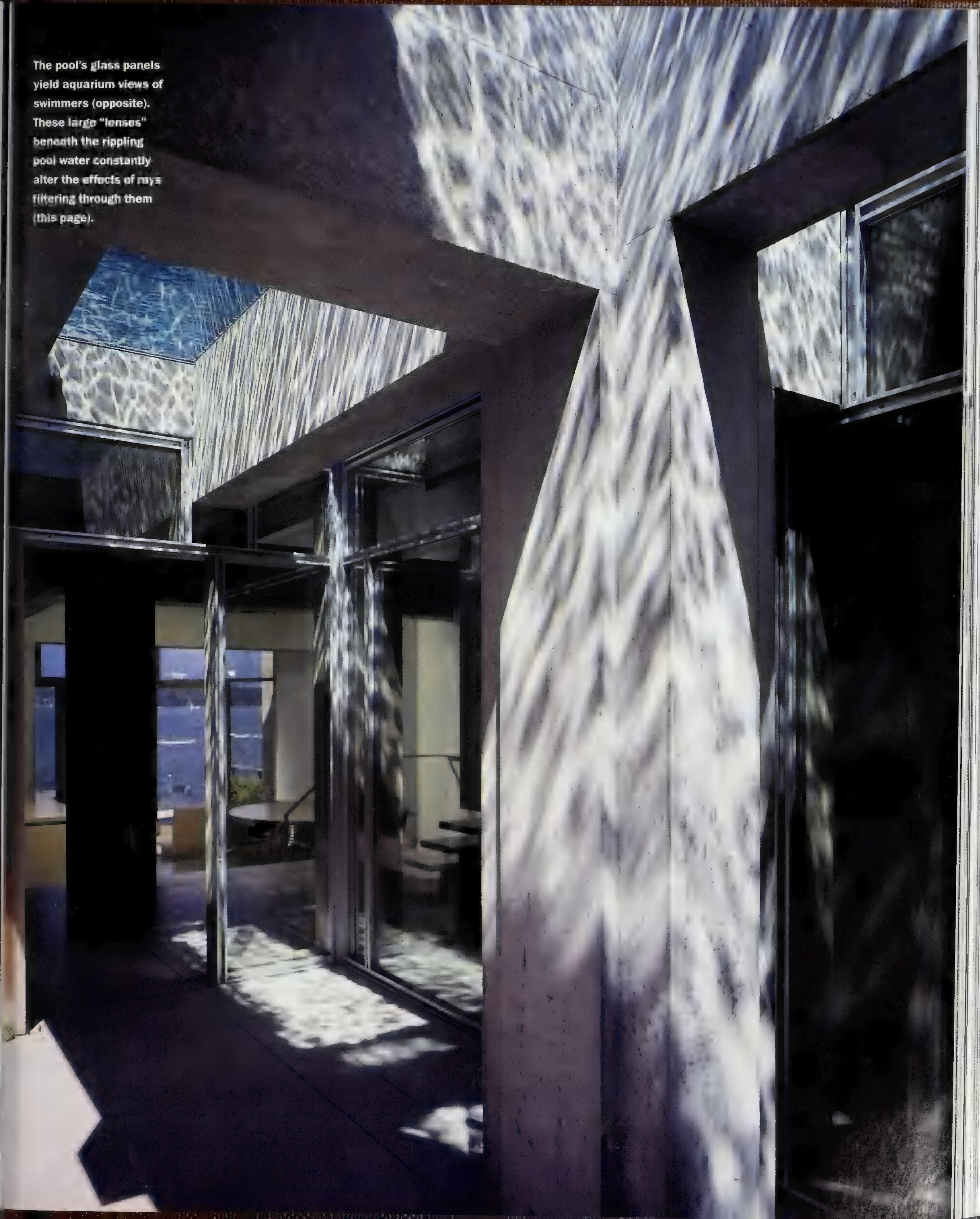


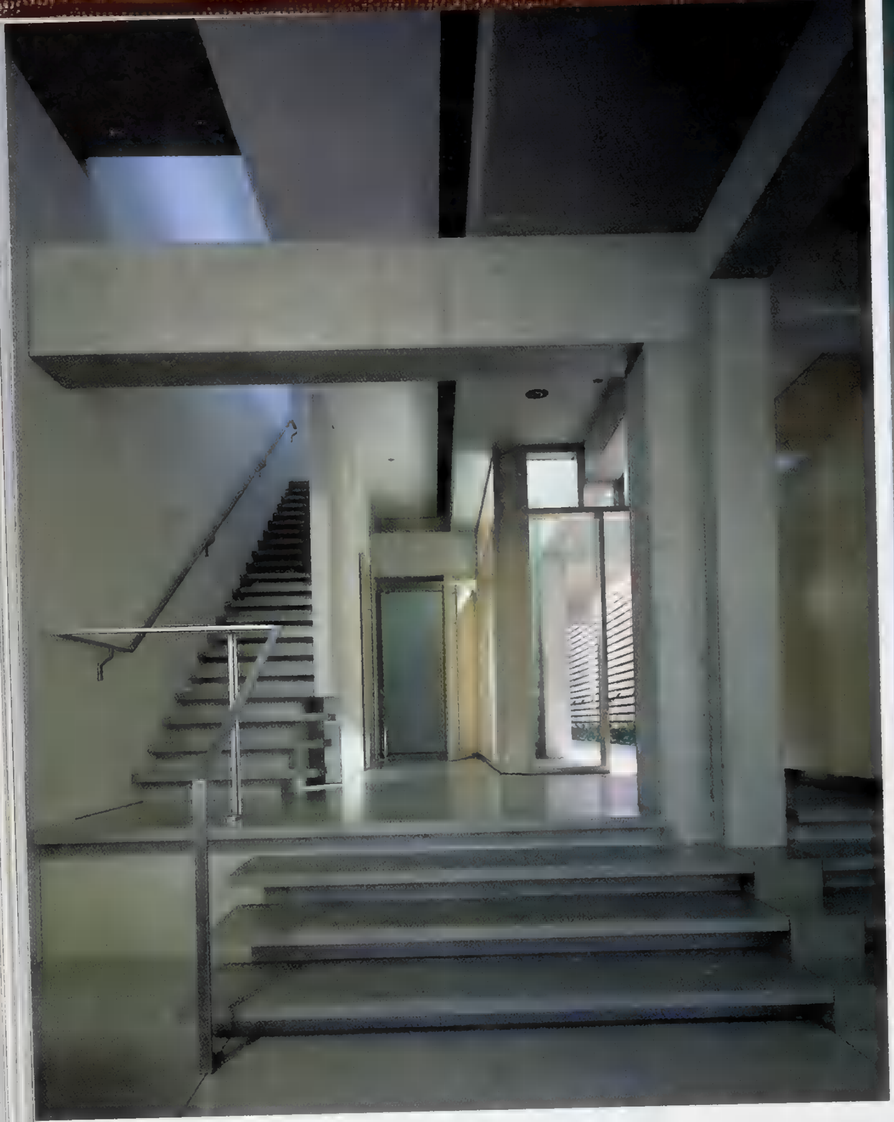
LOWER FLOOR

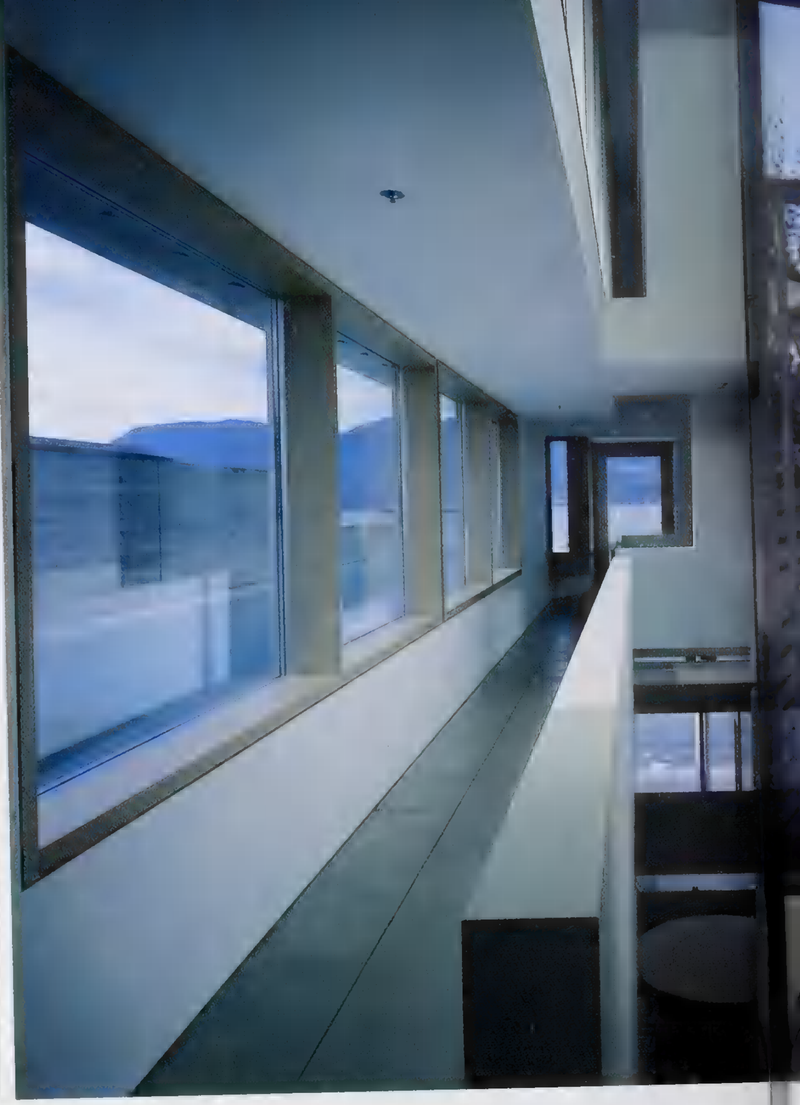


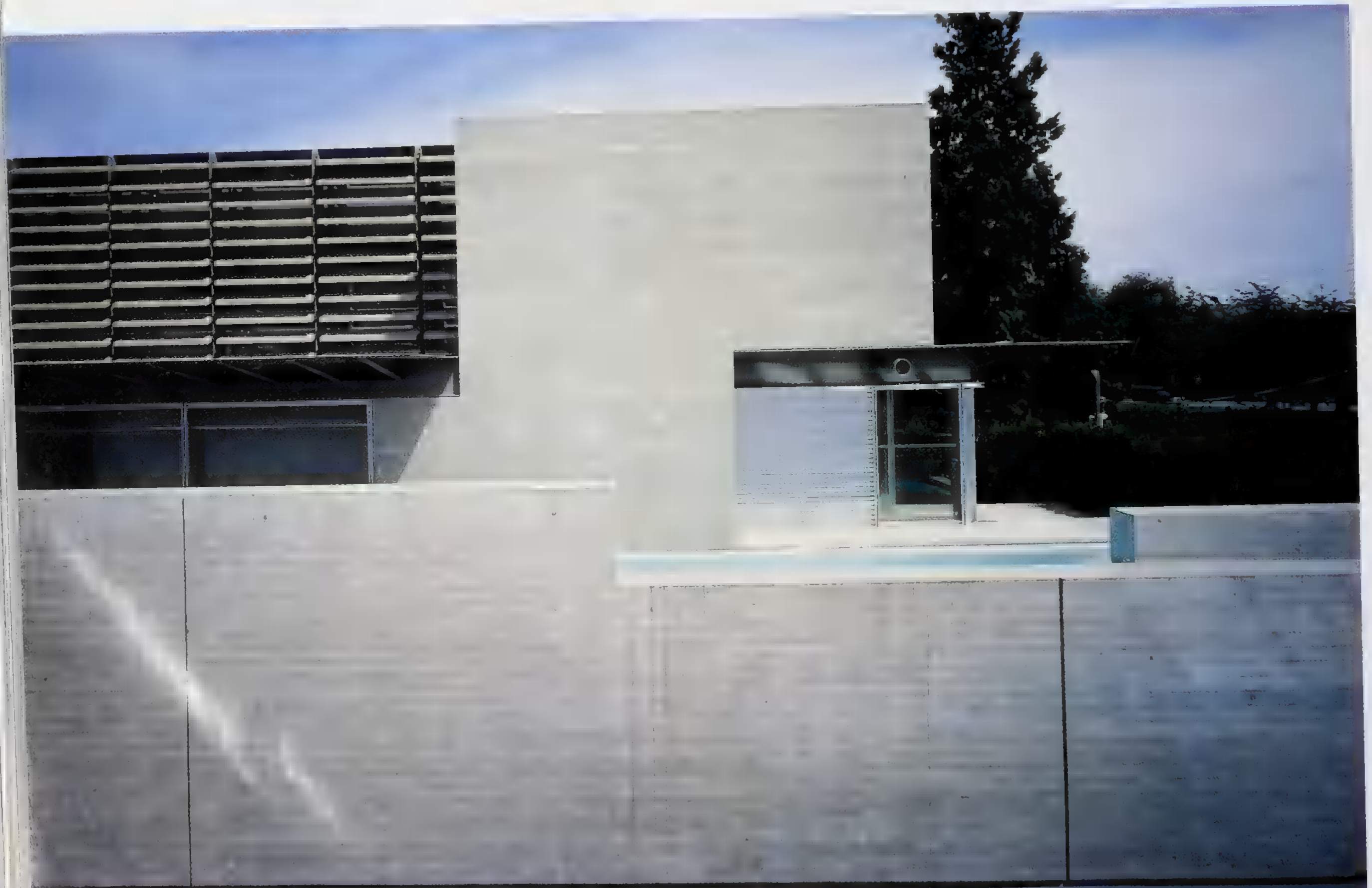
MAIN FLOOR

The pool's glass panels yield aquarium views of swimmers (opposite). These large "lenses" beneath the rippling pool water constantly alter the effects of rays filtering through them (this page).









Sectional complexity (above left and right) plays against the forceful constant of north-south views toward the bay—vistas that penetrate the layering and interlocking of planes on the balcony level (above right) but open up fully in the living room (opposite, top). In the double-height bedroom (opposite, bottom), a louvered clerestory can admit light even when the lower windows are covered for privacy. In pure elevation (left), the building's sculptural qualities give way to compositional calm.

reflections off the water and throughout the interior. A glass railing allows the dining space to interlock with the balcony on the upper floor, while a wafer-thin concrete slab spans precipitously overhead.

The house takes the pool's water line as its horizontal datum, with the entry-level floor below following the site's sloping topography, while high above it, giant louvered clerestory windows face west. (Louvered clerestories also rise to the north and south within the bedroom and study, respectively.) The distance between the high western windows and the facing wall changes along the length of the house—from 10 feet at its widest, drawing daylight into an inner dressing area, to 1 foot wide at its narrowest, creating an illuminated ceiling slot at the balcony's south end. Tying together the sectional play are long, penetrating views, modulated on the balcony level by layered planes and interlocking volumes that ultimately reveal slivers of sky.

Like CAT scans, sectional slices can describe the relative placement of structure, solids, and voids but are not capable of capturing the spirit. Here, the shimmering light that animates the concrete walls breathes life into the house, giving it the vitality of a living thing. ■

Sources

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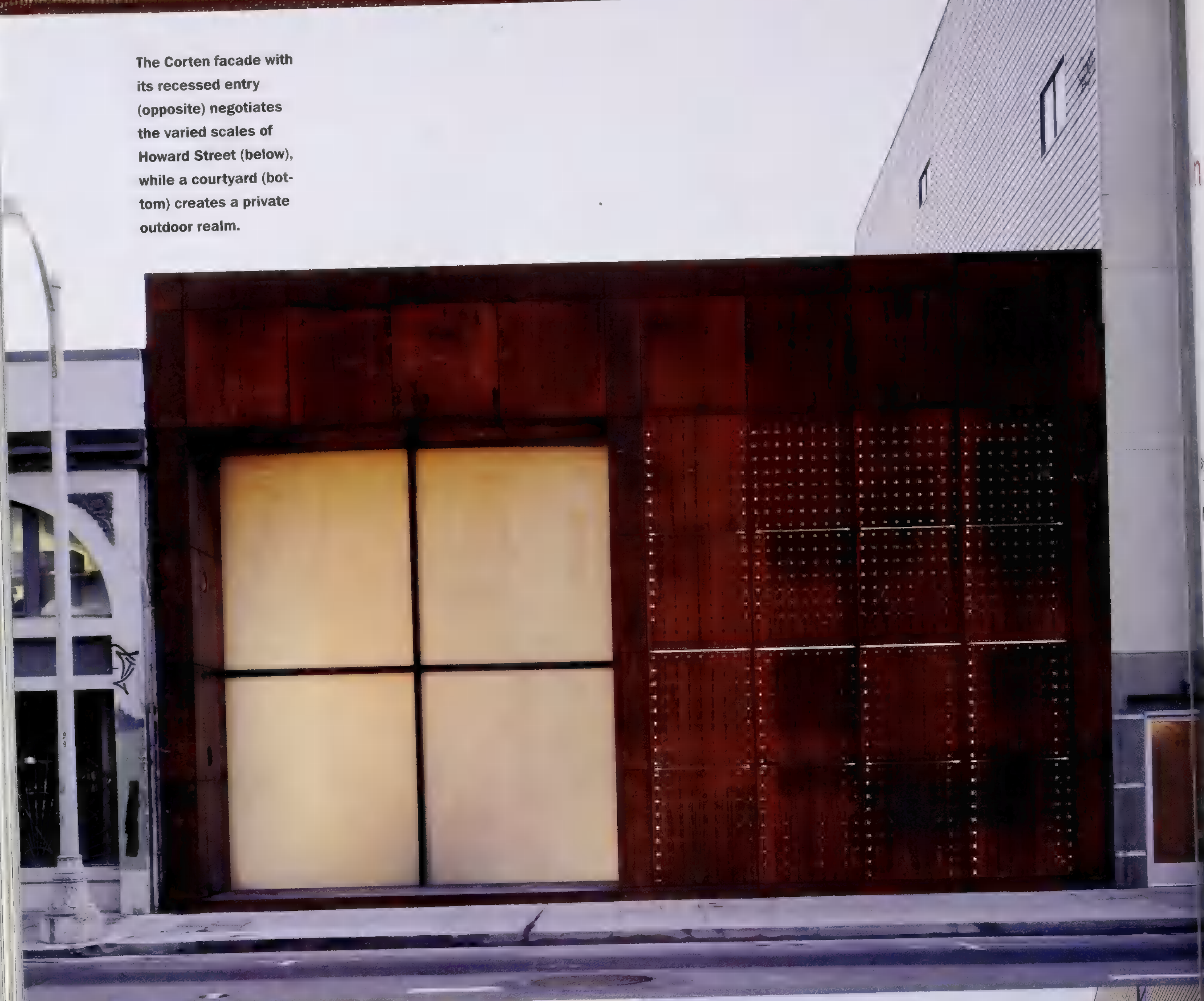
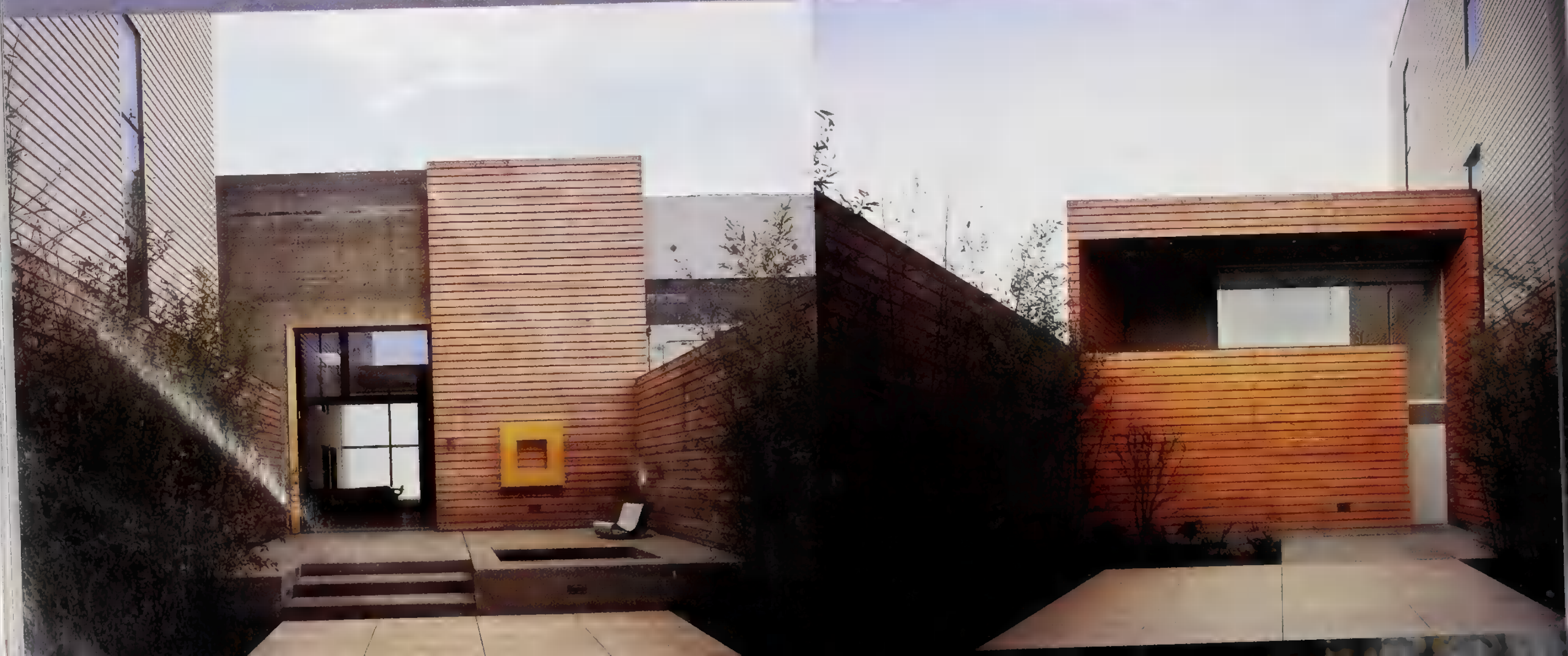
The Corten facade with its recessed entry (opposite) negotiates the varied scales of Howard Street (below), while a courtyard (bottom) creates a private outdoor realm.





Jim **Jennings** uses multiple optical effects to animate his **HOWARD STREET HOUSE** in a gritty San Francisco neighborhood

By Clifford A. Pearson

The ancient Greeks learned that a small aperture can turn a simple box into a camera obscura, a room-size device for casting images from the outside onto an interior surface. In the process, the image gets altered—reversed and flipped upside down. For a residential commission in San Francisco's South of Market neighborhood, Jim Jennings turned the house itself into a camera obscura—literally and figuratively.

Set in a transitional part of town where car body shops bump up against trendy loft buildings, the 4,500-square-foot house for two single men rests on the foundation of a small industrial building, retaining some of the old structure's concrete perimeter walls. The streetscape here is ragged and gritty in an attractively hip way. Until last year's tech bust, dot-com whiz kids paid top dollar to live in this area. Jennings, whose office is nearby, knows the neighborhood well and set out to design a building that captures the spirit of the place yet transforms it. Like a camera obscura, the house projects the life of the street inside, in the process inverting the rough into the elegant, the public into the private.

A longtime fan of Corten steel, Jennings shielded most of the house's front elevation with 3/16-inch-thick panels of the rusting metal punctured with a tightly spaced grid of small holes. Placing a glass plane 14 inches behind the perforated metal, he created a multiple camera obscura effect with hundreds of images cast on the glazed front wall of the rooms inside. Because the apertures are larger than pinholes and the focal plane—the glass—is so close behind them, the projected images appear out of focus. Whenever a car pulls up or a pedestrian walks by, the grid of fuzzy projections dances along the glass surface, conveying an animated quality.

From the street, none of this optical manipulation is apparent. Instead, the perforated steel has the feeling of industrial pinstripes—a sophisticated material with a subtle pattern. A two-story-high, four-square grid of translucent glass, recessed within the rusting facade like a gigantic window, adds to the house's aura of mystery. Visitors can look, but they can't see in. As Jennings explains, "I like the building's inscrutable character."

Designed for two young, heterosexual, single men who were partners in a successful tech company they have since sold, the house reflects their flexible, affluent lifestyle. A large block with spaces for living, working, and sleeping occupies the front of the site, while a smaller pavilion, with garage and guest room above, stands on the other side of a generous courtyard. The heart of the main structure is a 20-foot-high living/dining/entertaining space that runs along one half of the building and rises to a gently curving barrel vault. Tucked into the other half of the block are a kitchen, pantry, and study on the ground floor and two master bedroom suites upstairs. Sliding pocket doors, made of translucent glass framed in mahogany and blued steel, can divide the front of the main building into rooms for meetings or offices, should the two owners start up a new company. The same type of doors separate the kitchen and a den/office from the main living space. By hiding partitions in wall pockets, Jennings emphasized the clean lines and impressive proportions of the long, high living space.

While the ground floor offers big, light-filled spaces, the second floor presents a more intimate environment. Starting with the mahogany stairs that ascend to the bedrooms between tightly spaced poured-concrete walls, Jennings introduced a sense of compression to give the second floor its own character. Indeed, neither bedroom has windows to the outdoors, only bands of translucent glass overlooking the main living

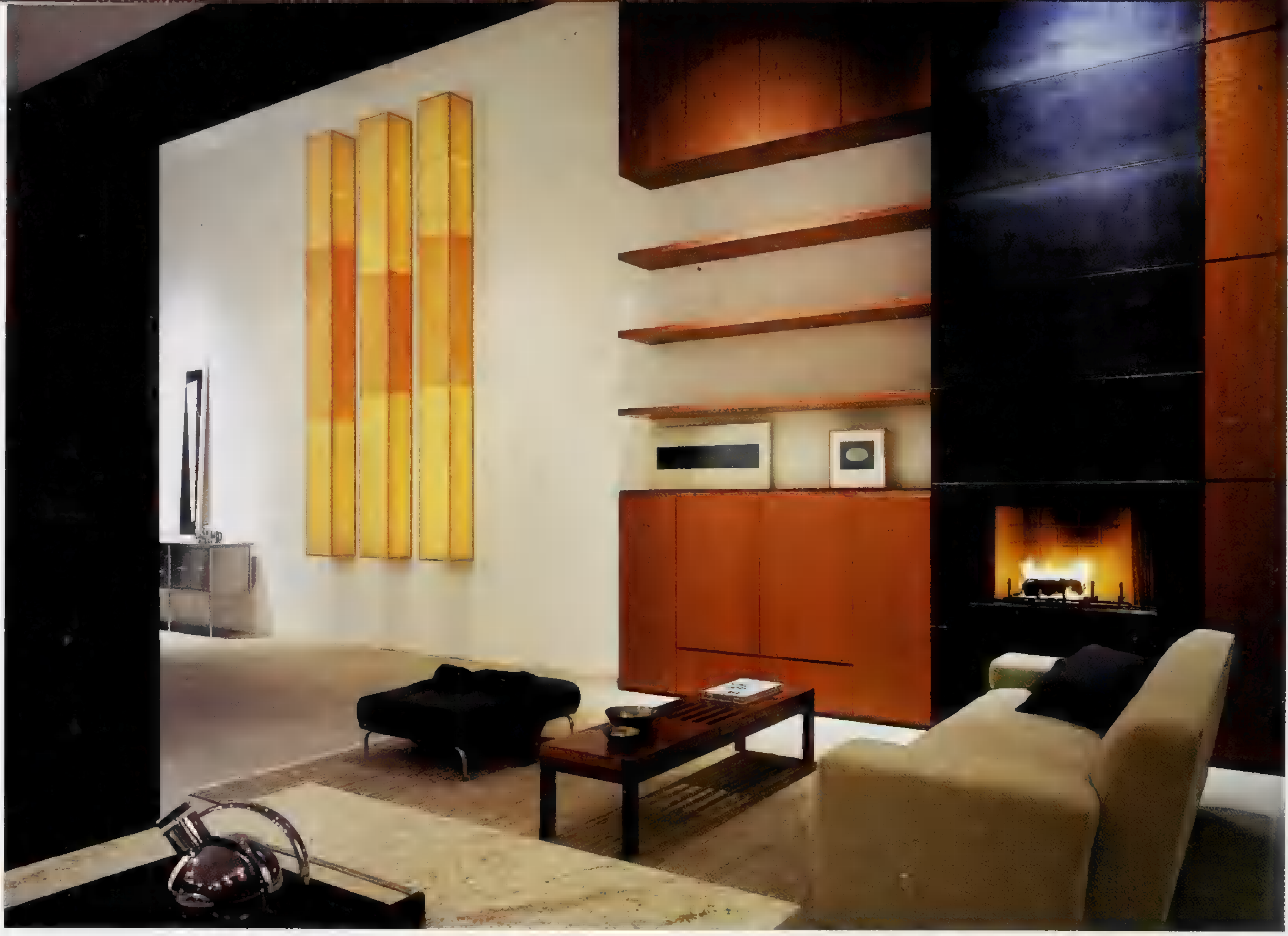
Project: *Howard Street House, San Francisco*

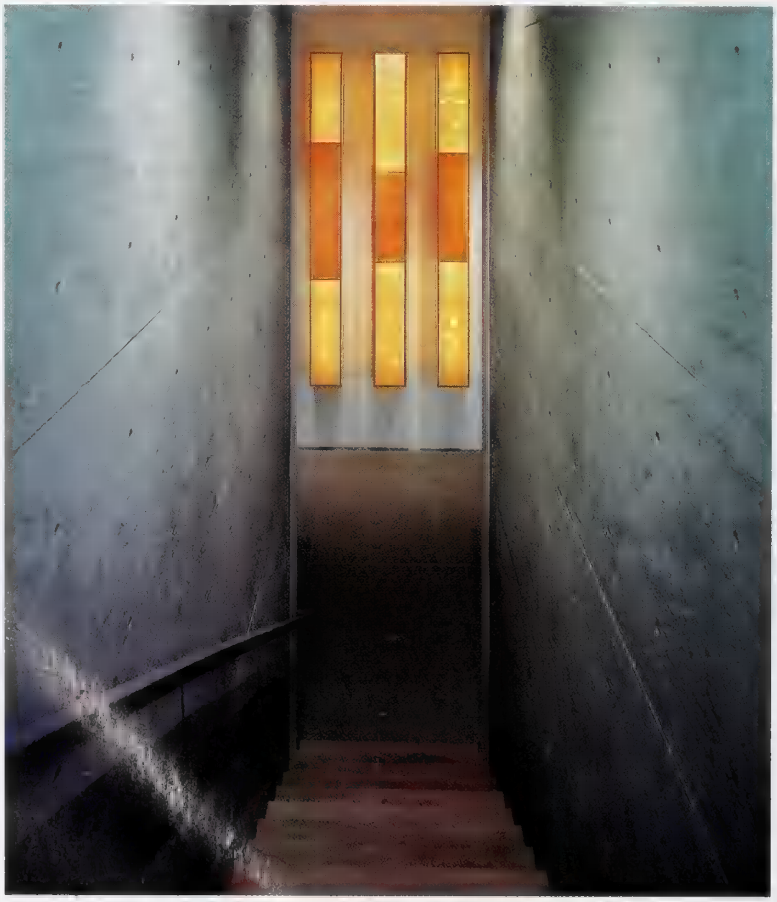
Architect: *Jim Jennings Architecture—Jim Jennings, principal in charge; Paul Burgin, Ross Hummel, Michael Lin, Troy Schaum, Melina Visone*

Engineer: *Santos & Urrutia (structural)*

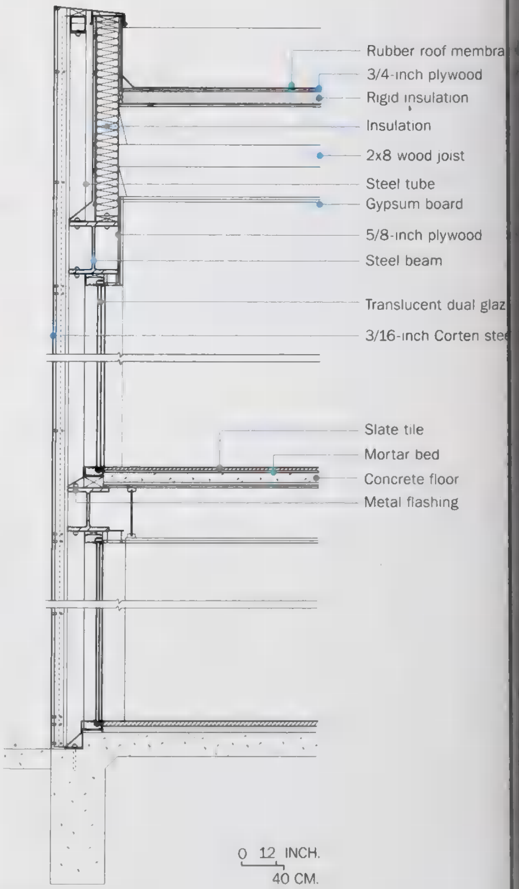
Consultants: *Dan Dodt (lighting); M. Todd Davis (project consultation); John Wigmore (light sculptures); Ferrari Moe (waterproofing)*

General contractor: *Ryan Associates*



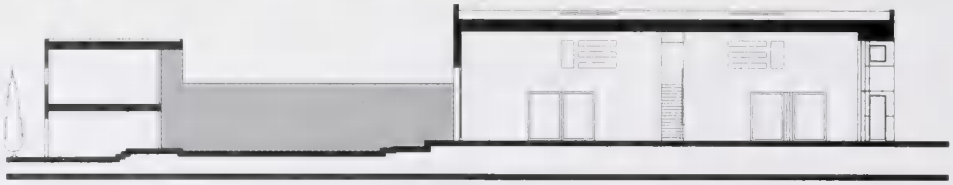


Plug holes in the concrete walls lining the stairs (left) recall perforations in the main facade (section right). Jennings contrasts the expansive living space (above) with more compressed areas such as the stairs and kitchen (foreground in photo above).

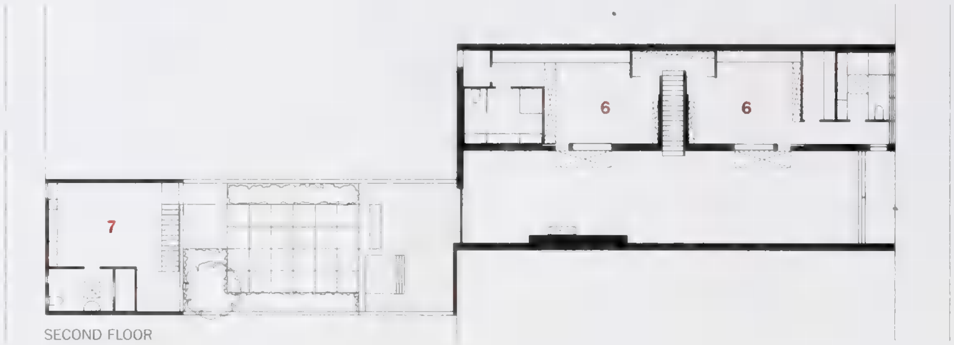


WALL SECTION

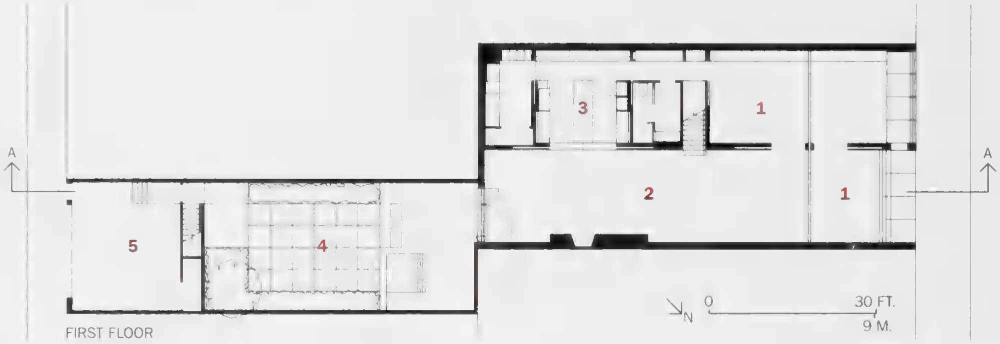
Running the full length of the main building, the living space can be divided by glass pocket doors, transforming the front into a place of business.



SECTION A-A



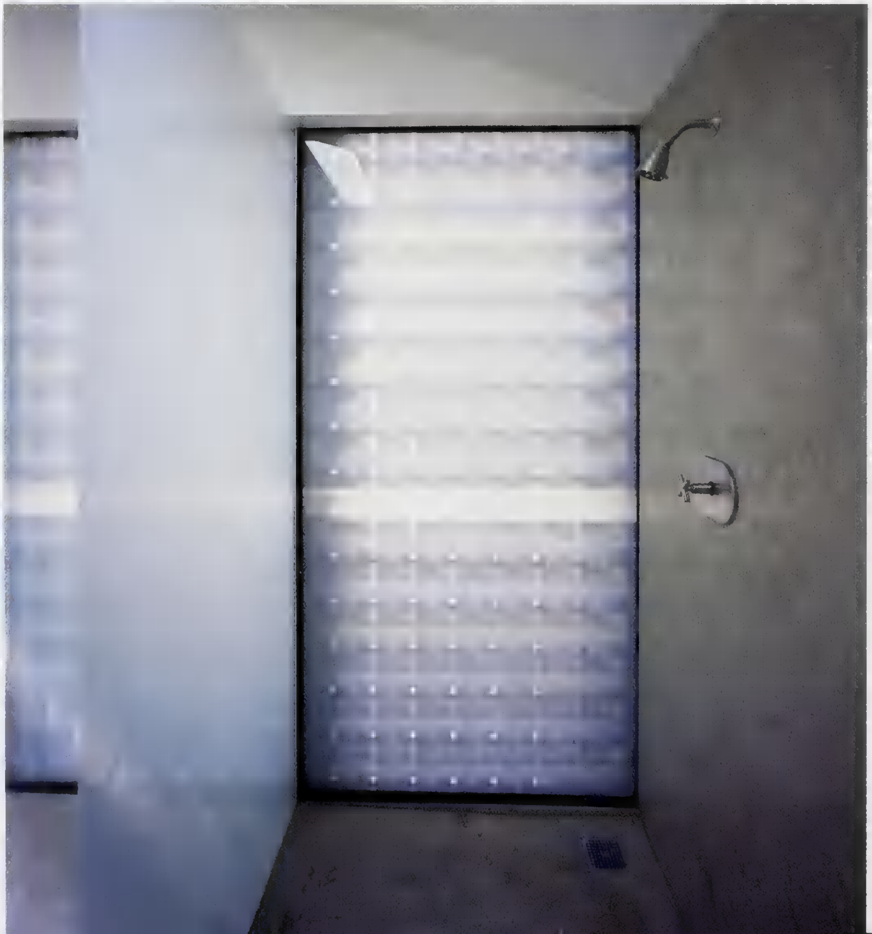
SECOND FLOOR

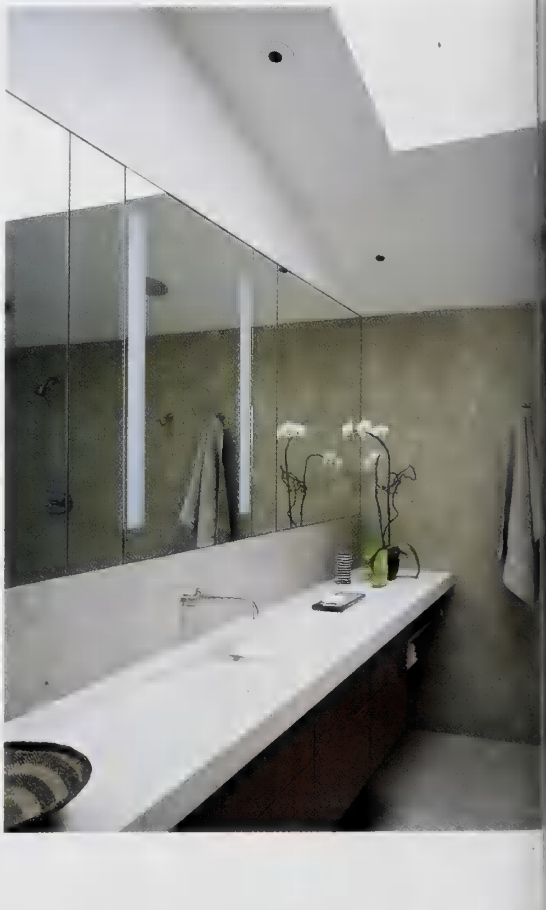


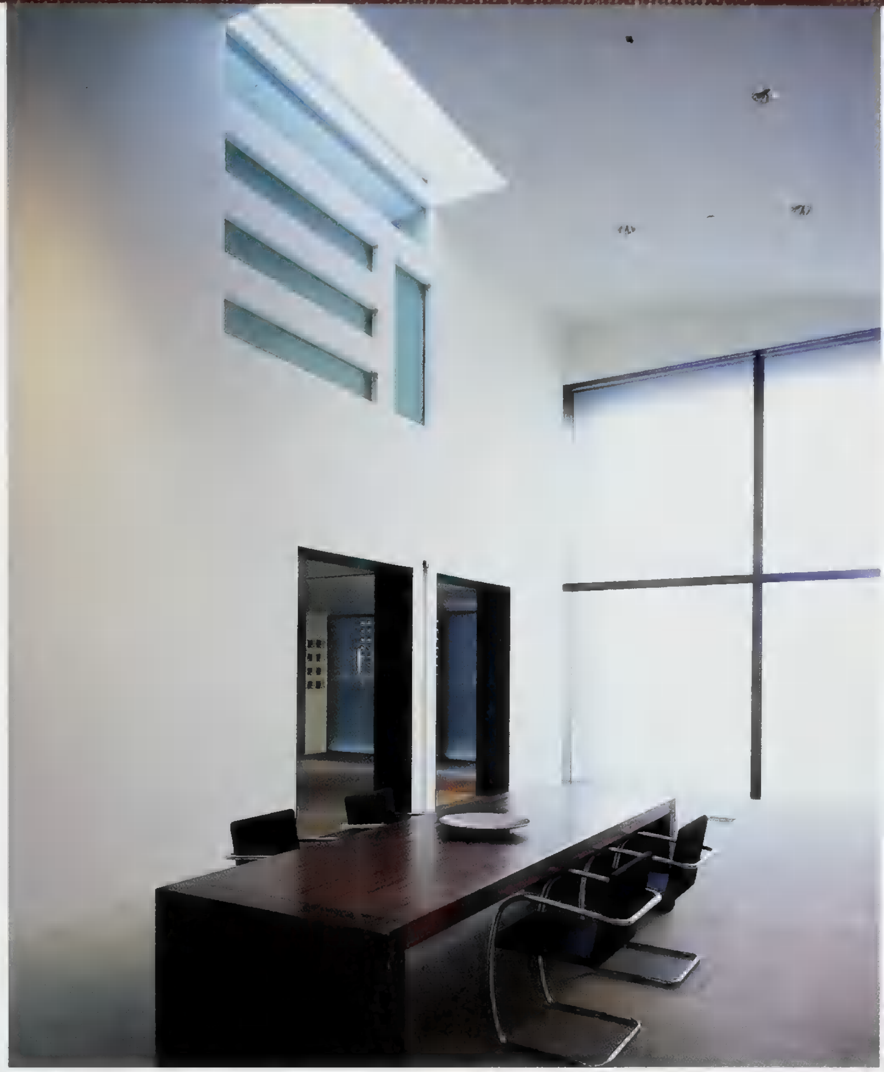
FIRST FLOOR

1. *Office/den*
2. *Living/dining*
3. *Kitchen*
4. *Courtyard*
5. *Garage*
6. *Bedroom*
7. *Guest*

Jennings treats daylight as a precious commodity in order to focus its impact. A bedroom, (opposite, left) has no windows, just bands of glass overlooking the living space (opposite, right) and skylights. In a bathroom (below), sunlight enters from above. Holes in the Corten facade project images onto a glass wall in the shower (below left).







space and a couple of skylights deeply recessed in the ceiling. The master bathroom on the Howard Street side of the house, though, offers the mesmerizing presence of the camera obscura glass, part of which becomes a wall in the shower. Because the ceilings are much lower on the second floor than in the living room, the gentle curve of the barrel vault leaves a greater impression here. Nothing on the outside of the house hints at curving ceilings, making them, says Jennings, "a soft surprise."

Also hidden from the street, a large courtyard brings light and air to the back of the long living space. Paved with milky travertine and edged with pebbles and bamboo, the courtyard extends outdoors the sleek aesthetic of the interiors. In nice weather, this house becomes the perfect party venue, perhaps the reason the clients decided to pool resources and live under one roof.

RETAINING THE EXISTING CONCRETE WALLS, JENNINGS GIVES A SHAPE TO THE GHOST OF A LOST BUILDING.

Although separated from the clutter of the street, the courtyard is not an island removed from the city. Because the property's lot lines zig and zag, neighboring buildings press in on the courtyard, making it part of the urban collage. To the west, there's an apartment building's vinyl siding; to the east, the brick walls of a small commercial building. Providing a datum for the ensemble, Jennings wrapped the walls of the courtyard with planks of Alaskan yellow cedar, attached from behind to hide the screws. Where the adjacent commercial building backs up to the courtyard, the architect ran cedar planks up part of its facade, visually stitching together the house and its neighbor.

Working essentially within the footprint of the commercial building that once stood on the site, the architect inserted a wood-frame structure between concrete lot walls. Radiant heating in the new, lightly sandblasted concrete floors of the two-story-high living space keeps temperatures comfortable around people without having to heat the upper portion. Jennings also retained an old concrete wall on the courtyard side of the main house (adding only a parapet), giving partial shape to the ghost of the lost building.

In a city such as San Francisco, little lasts forever. Earthquakes, immigration, changing tastes, and new patterns of economic development alter the streets and neighborhoods. By recalling what had once been there and projecting on the inside fleeting images of the world beyond its walls, the Howard Street House engages this process of change and gives it domestic form. ■

Sources

Corten steel: *3D Studios*

Alaskan yellow cedar: *Rushton Hawley*

Aluminum windows and wood-frame pocket doors: *Kenner USA*

Custom cabinetwork: *Plant Architectural Woodwork*

Concrete floors and walls: *Whiteside Concrete*

Sofa, dining table, and benches: *Custom, by Laurie Blessen/Elbe + Co.*

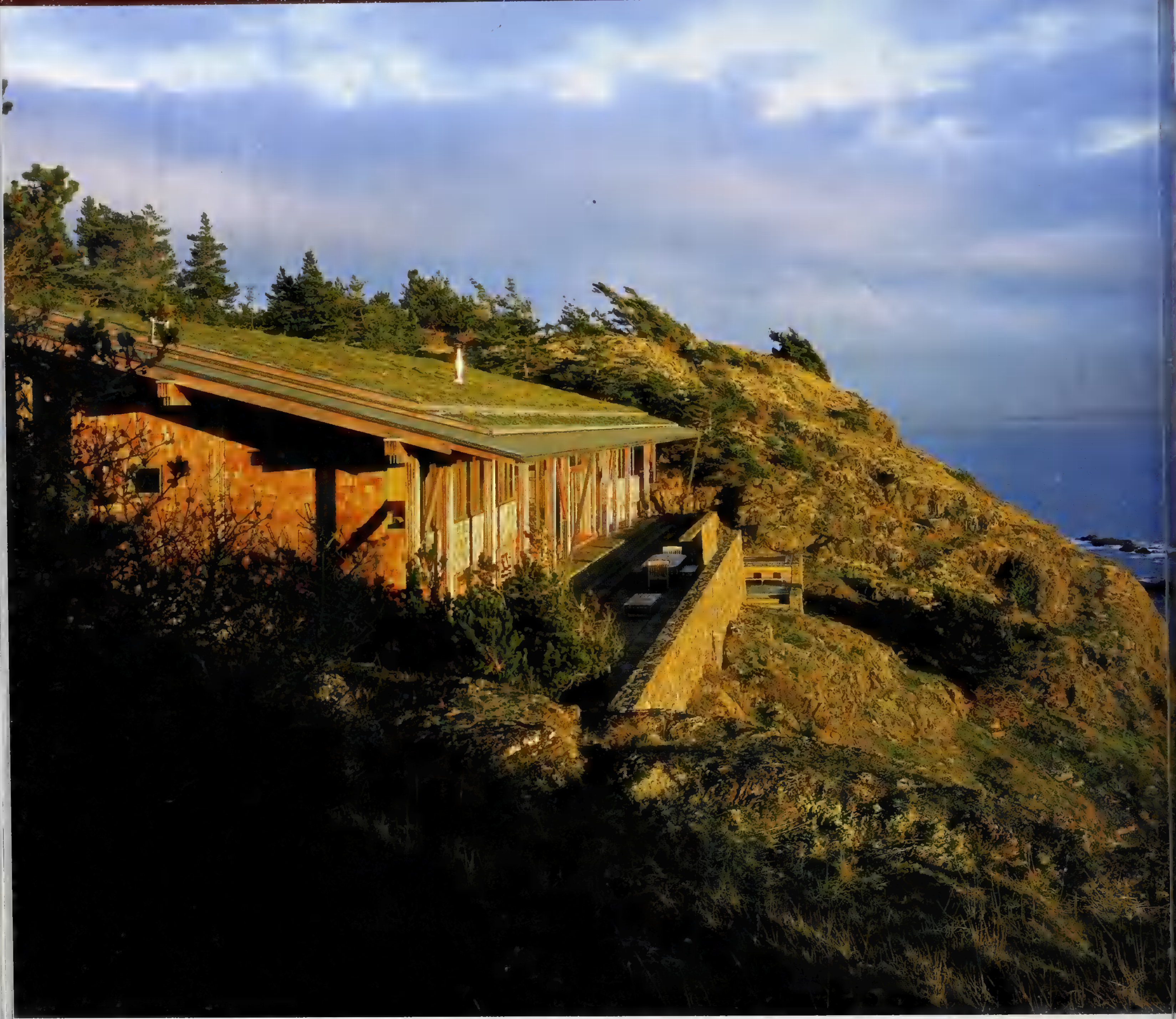
Furnishings: *Limn/San Francisco*

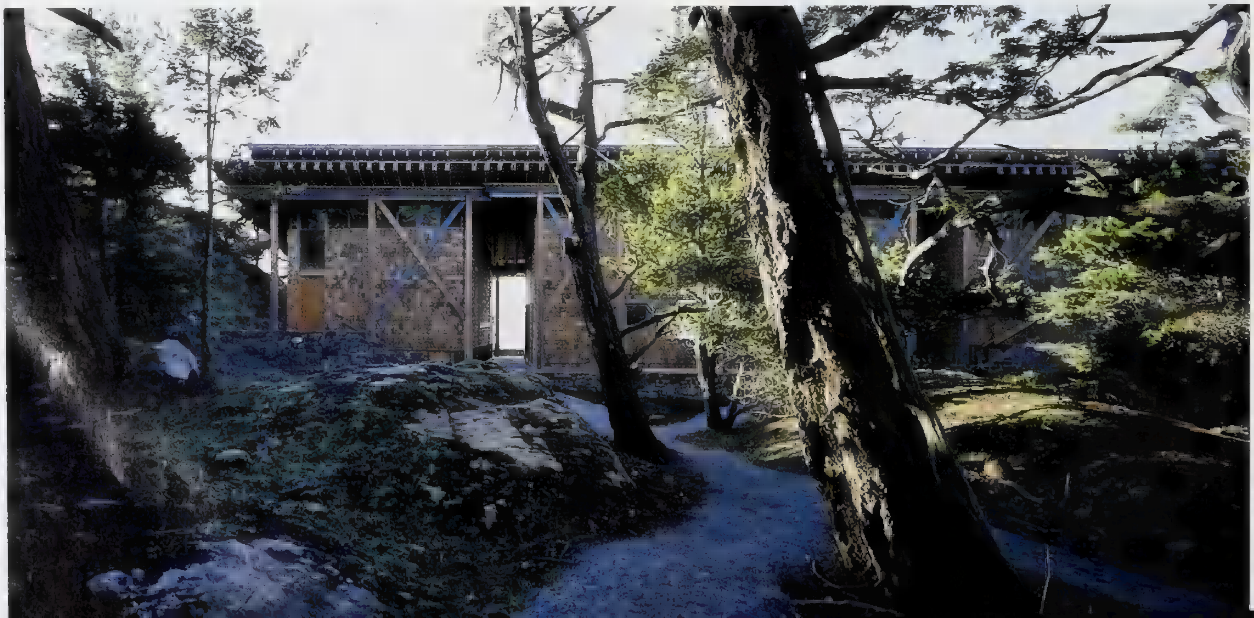
Light sculpture: *John Wigmore/Wigmore Lighting Design*

www For more information on the people and products involved in this project, go to Projects at **architecturalrecord.com.**

Attuned to Lopez Island's rugged beauty, Jim **Cutler** sets his sod-roofed **REEVE RESIDENCE** seamlessly into a wild coastal cliff

Blending with its setting, the house nestles amid mossy outcroppings. Its sod-covered shed roof, planted with a native seed mix, matches the angle of the windswept treetops. A retaining wall of Montana moss stone echoes the site's lichen-encrusted boulders. Like a gently formed plateau, the terrace before the house is set into the terrain. The spectacular coast unfurls below.





Like a natural landform, the house alters its mood—and the hues of its roofscape—with changing seasons, light, and weather (above and previous page). Mimicking the surrounding trees, the entry facade begins to blend with the forest (left). The stone retaining wall fits into the landscape like a Native American ruin (opposite, top and bottom).

By Sheri Olson, AIA

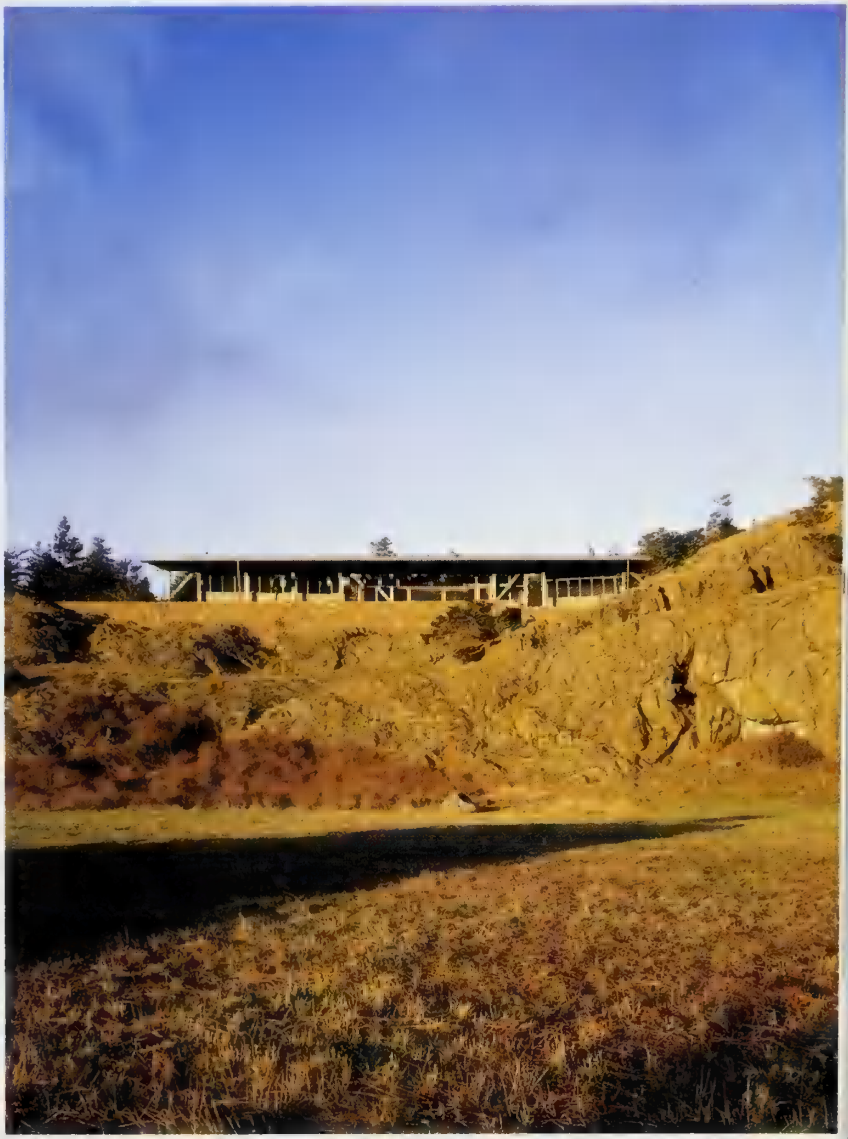
On calm days, you can hear orca whales blow just offshore or the sharp, thin calls of bald eagles circling overhead. The pristine 120-acre site on the south end of Lopez Island, in the Pacific Northwest, follows a mile of convoluted coast, running from vertical cliffs above the Strait of Juan de Fuca to grassy terraces with protected bays. Pastoral Lopez, home to sheep, cows, and llamas, as well as a small population of year-round residents, is the most level of the three largest San Juan Islands, but its southern end tilts dramatically upward to form one of the most rugged shorelines in the archipelago. For 10 years, Seattle residents Sally and Tom Reeve hopped the state ferry to their secluded vacation property, living with their four young children in a trailer off the grid. "It took us a long time to get up the nerve to build something," says Tom Reeve. "We were afraid of negatively impacting the land."

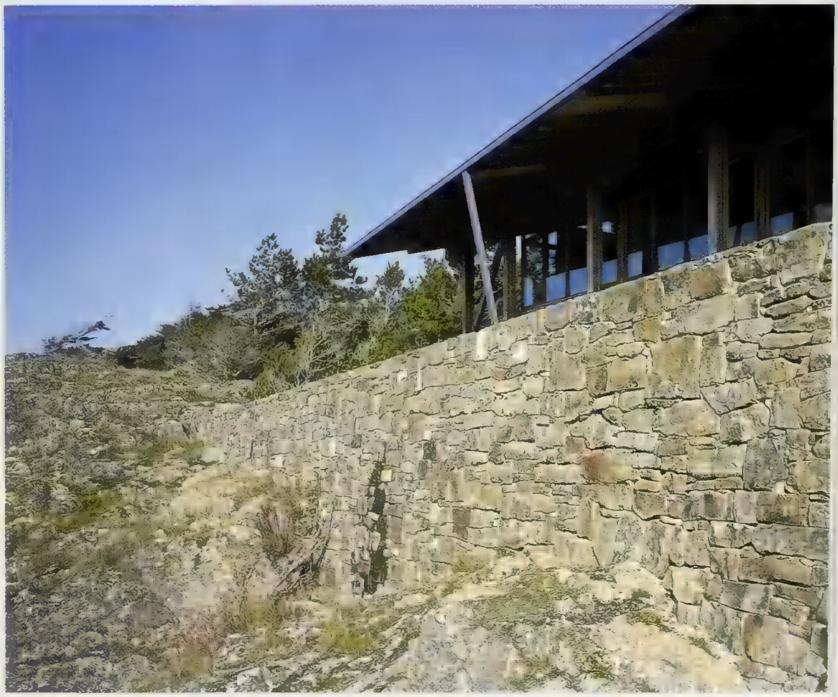
Finally ready, they contacted architect Jim Cutler, FAIA, whose reputation for houses that blend into natural settings had attracted them. His approach is not to be confused with an emphasis on sustainability, since, paradoxically, Cutler is less interested in sustainability per se than in attaining a successful visual fit with the landscape. He believes that if you connect people to the beauty of the environment, they will turn toward the deeper issues of preserving it. The Reeve house is the finest example yet of Cutler's talent for siting, an instinct that in this case ran contrary to his clients' initial vision. The Reeves showed the architect a high spot with a stunning view, but, Cutler says, "It was too exposed and would have desecrated the cliff." Instead, he nestled the house discreetly amid mossy outcroppings, between a forest to the north and the coast to the south.

A single, sod-covered shed roof, supported by wood columns on a bluestone plinth, forms a pavilion that shelters the building's three independent volumes: a 925-square-foot bunkhouse for children and guests, a 1,185-square-foot communal living area, and a 445-square-foot master suite. The design responds to the dual nature of this site—not only its windswept cliff, but also its more sheltering woodland side.

As viewed from the beach, 100 feet below, the house's stone retaining wall blends with the cliff like a Native American ruin. Its joints are so deep that the mortar is imperceptible. Cutler scrapped early plans to quarry the site's stone when he discovered its whiteness. So he switched to a Montana moss stone, which echoes the cliff's lichen-encrusted boulders. The Reeves can attest to the effort required to achieve a seamless—and apparently effortless—fit with the terrain. "We trekked out with Jim to survey the site in wind and blow," laughs Sally Reeve. "It was like Cutler boot camp." The architect, who develops intimate relationships with his sites, met his match in the Reeves. In extensive hikes with their own pack-bearing llamas, they have come to know almost every bend and ripple on the property.

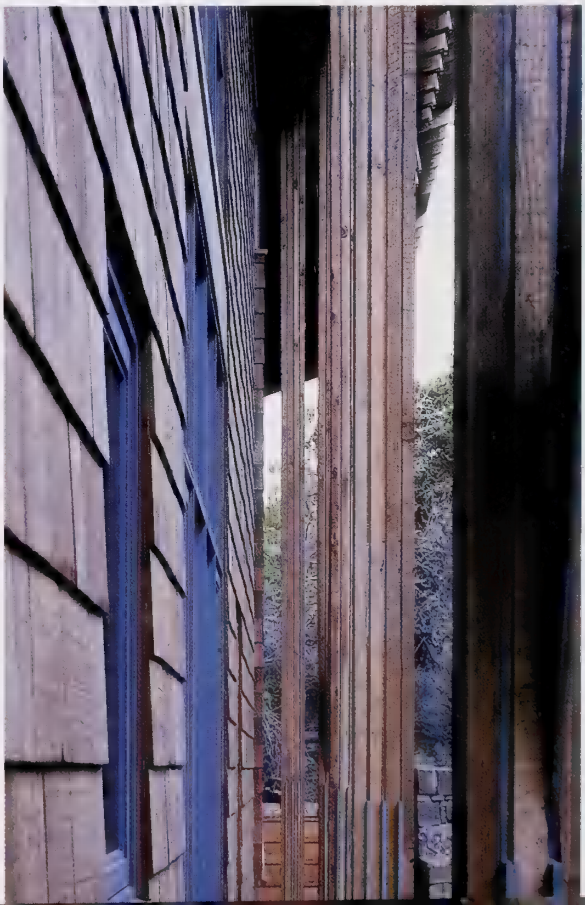
Here, the 70-mile-per-hour winds, whipping across the open water, can shear off the tops of cliffside trees. To render the roof as streamlined and inconspicuous as possible, Cutler gave it a low pitch, matching the angle of the truncated trees. Harmonizing with its setting, the roof was planted with a native seed mix. While sod offers obvious energy efficiency, modulating interior temperatures, the state's strict energy code assigns it no official U-value, thus requiring a layer of insulation under the turf.

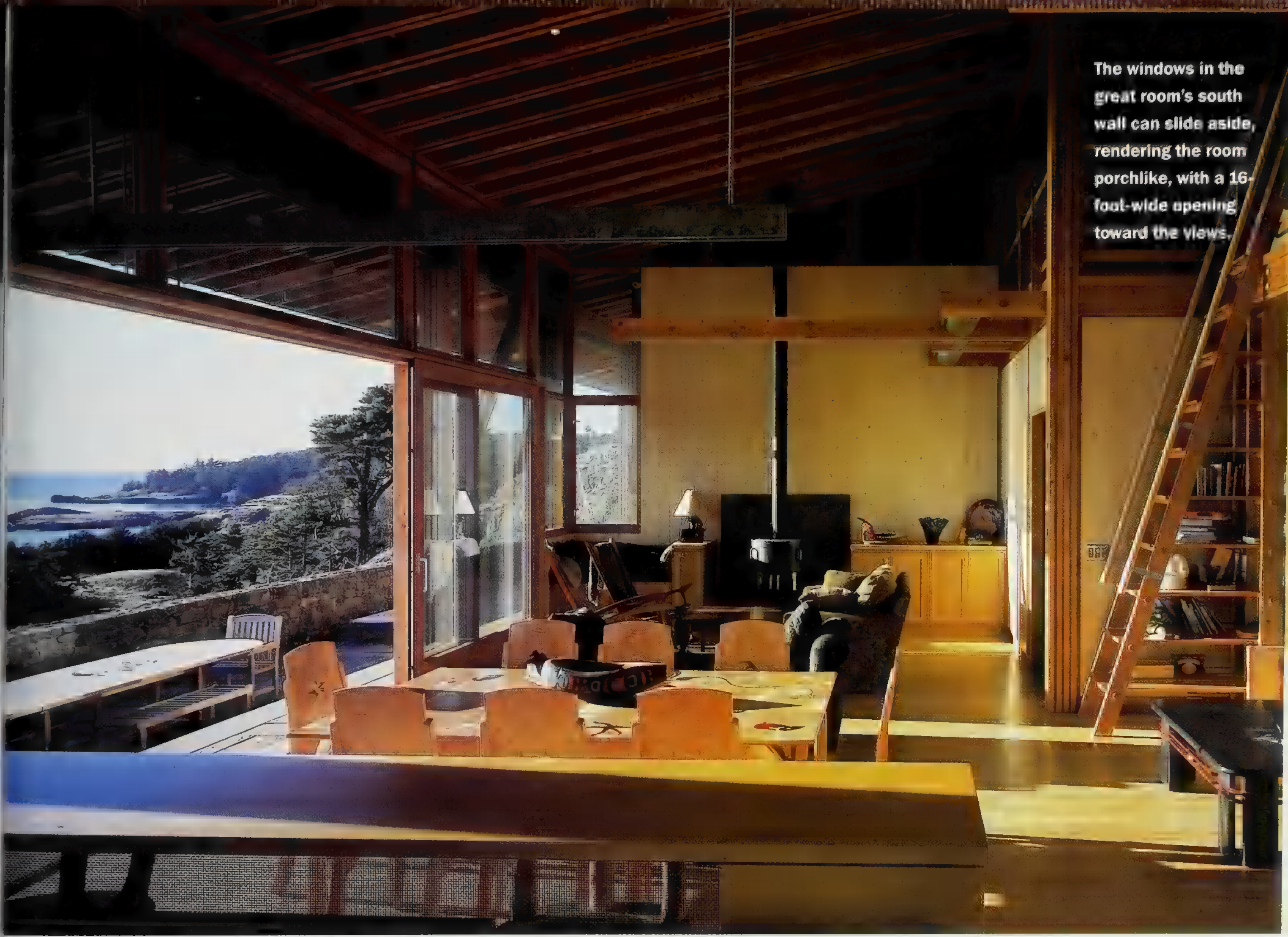




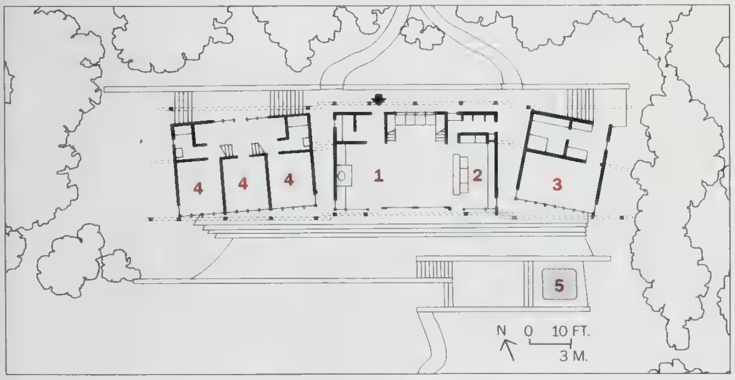
Project: *Reeve Residence, Lopez Island, Washington*
Architect: *Cutler Anderson Architects—Jim Cutler, FAIA, partner in charge; Janet Longenecker, project architect; Julie Cripe*
Engineer: *Coffman Engineers*
Consultants: *Ecotope (energy); Weatherholt (roofing)*
Interior designer: *Susan Okamoto*
General contractor: *Russet Construction*

Spaces between the volumes frame coastal views (below). Throughout the house, columns and structural beams combine wood studs with steel plates (below right). Even in the kitchen (right), the windows help to merge the indoors and out.





The windows in the great room's south wall can slide aside, rendering the room porchlike, with a 16-foot-wide opening toward the views.



1. *Living*
2. *Kitchen*
3. *Master bedroom*
4. *Bunkhouse bedroom*
5. *Hot tub*

Rainwater, siphoned off the roof, collects in an 8,000-gallon underground cistern for the house's fire-sprinklers—a necessity in such a remote location.

On approach from the forest, you get glimpses of the watery horizon between the house's volumes. The entry facade's classically proportioned, but roughly hewn, wood colonnade mimics the surrounding trees, merging house and forest. With the scrupulous detail and craftsman's finesse that typifies Cutler's work, columns and structural beams throughout the house are multilayered sandwiches of wood studs and galvanized steel plates. A web of steel plate and wood cross bracing further articulates the entry facade.

To achieve openness and flexibility under 250 tons of sod, Cutler placed the structure outside the exterior walls, allowing him to skew the bunkhouse and master suite toward specific views. To accommodate the clients' many friends, the bunkhouse—as compactly efficient as a boat—sleeps twelve. The house's central volume contains the "great room," with tall windows that delicately lift the roof above its white pine walls. On the south wall, huge glass doors roll aside, creating a 16-foot-wide opening with views toward a stone terrace and the coastline beyond.

To travel between the separate volumes, the family must go outdoors, but the heated stone plinth warms bare feet even in chilly weather, and the overarching roof provides an umbrella over in-between zones. This rustic character suits the Reeves' lifestyle. "We told Jim we didn't want a suburban house with a picture-perfect *Architectural Digest* living room," says Tom Reeve. "We wanted a cabin we'd really use."

In his careful siting of the Reeve retreat, Cutler resolves the conflict inherent in his clients' desire to build on a private piece of the Pacific Northwest without ruining the wilderness that attracted them to it in the first place. ■

Sources

Roof: *Taylor Metals (standing seam); Derbigum (built-up roofing)*
Paint: *Benjamin Moore*
Tile: *Dal-Tile*

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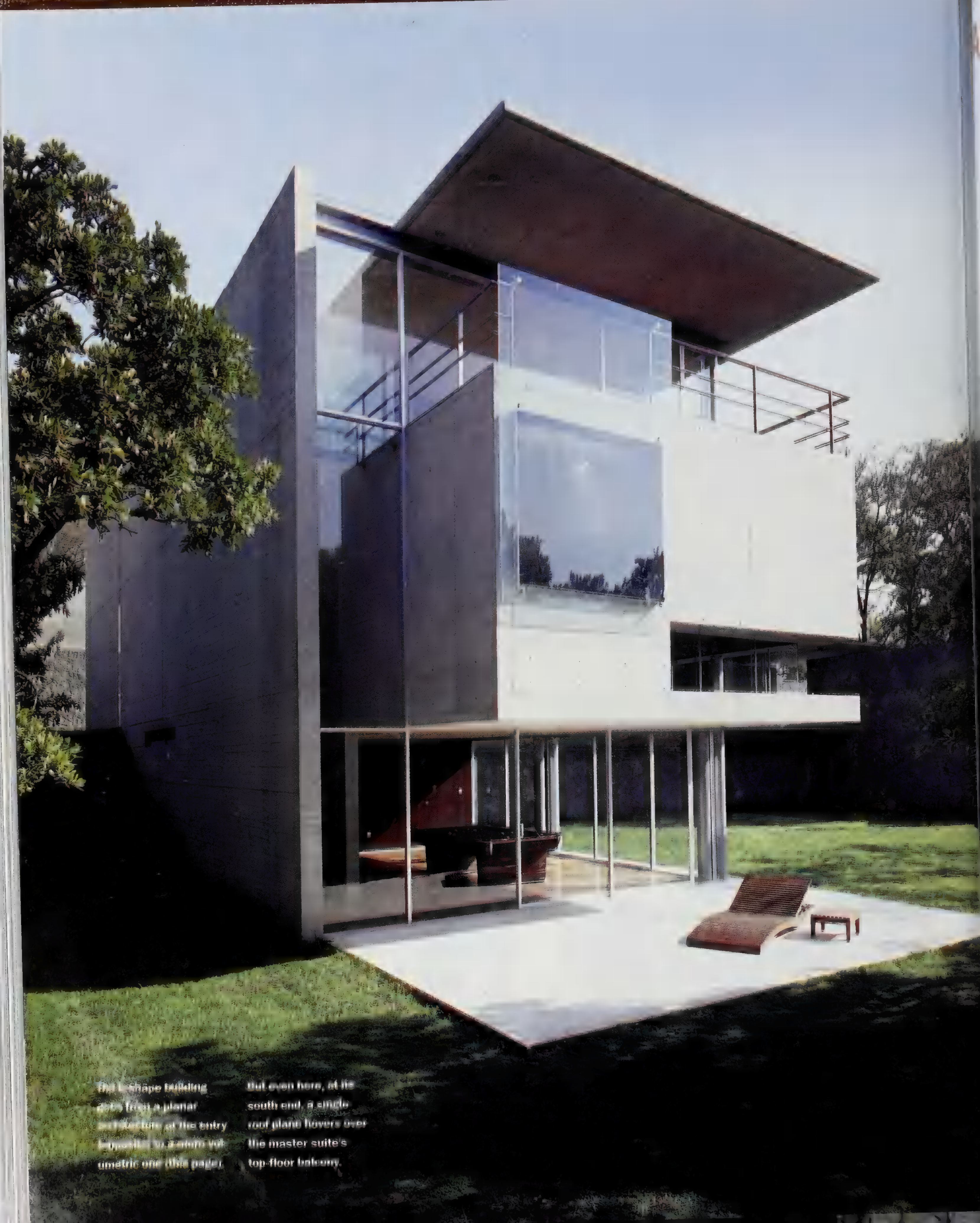
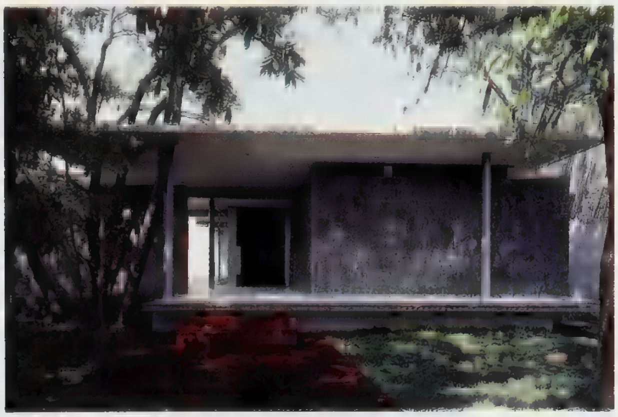


The L-shape building goes from a planar architecture at the entry (opposite) to a more volumetric one (this page), but even here, at its south end, a single roof plane hovers over the master suite's top-floor balcony.

Adriá + Broid + Rojkind shapes an evocative language of walls in the **F-2 HOUSE** near Mexico City

By Sarah Amelar

"A climbing wall was one of the first things our client, Alfredo, asked us for—even before he mentioned anything about the bedroom," recalls architect Isaac Broid of his F-2 House near Mexico City. "But then Alfredo met Paulina," adds Broid, "and things got serious quickly." By the time the house was done, the couple—a young pair in the computer industry—was about to marry, and the programmatic priorities had shifted. That request for a climbing wall went the way of Alfredo's bachelorhood, but massive walls remained the project's essence. As built, thick planes—basaltic volcanic rock or poured-concrete walls or a wenge-wood bookcase—lead the way, penetrating from outside in or between levels, sometimes creating baffles or a deep, narrow chasm.



The walls play transformative, transitional, or even controlling roles. The first walls you see on approach to F-2 House embrace its zone of privacy and calm amid nouveau riche, often garish, neighbors in a gated community. From the street, views toward the house's entry level are shielded by solid planes of pale-gray painted steel; rough, charcoal-hued basaltic rock; and light-reflective board-formed concrete. These perimeter walls, edging most of the quarter-acre site, are just low enough to reveal the tops of mature trees and, behind them, a glimpse of F-2's upper level. From inside the gate, the walls block out jarring views of nearby faux haciendas and neo-Tudor mansionettes that lack the vivid language of authentic Mexican architecture but are clad, nonetheless, in glowing shades of peach or electric blue.

F-2's quiet, Minimalist entry gate and surrounding walls establish the mood and architectural language of the house itself. Unlike the neighboring pastiches, it draws on the elegantly restrained palette of color and texture inherent in its materials. With purely Modernist forms, it borrows from such masters as Mies van der Rohe, but remains distinctly Mexican in the thickness of its walls, abstractly recalling the heft of traditional adobe.

From the entry gate, a teak-planked path through a shady forecourt leads west, straight to F-2's front deck, a cantilevered travertine plane reminiscent of Mies's Farnsworth House. Here, a staggered pair of basaltic walls, perpendicular to the path, forms a second view-obscuring threshold, intentionally denying the visitor immediate discovery of the building. But past this threshold, the place begins to reveal itself. One of the basaltic walls takes a 90-degree turn, wrapping the house's interior and heading deep inside. Behind the other wall, the building unmasks its full size and L shape, stepping down a slope to add a partial bottom floor, a third level, at its base.

Most of the house is cast in bright concrete, contrasting with the entry's dark, porous walls. Clearly Mies-influenced in their articulation, the rough basaltic planes never touch the flat concrete roof above them; they are separated by a glass clerestory strip, or sometimes, on the interior, by an open gap. Similarly, the walls stand apart from the slender steel columns that support the flat roof, allowing it to float visually above the clerestory.

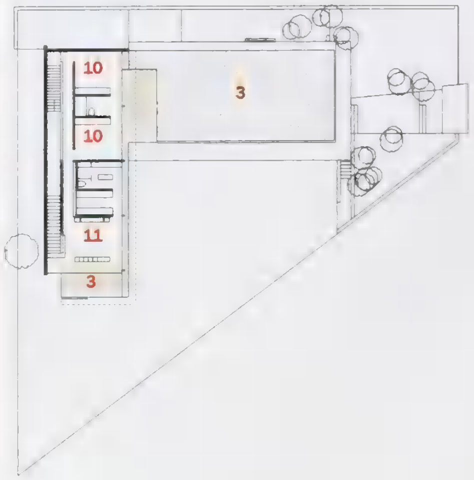
As the house bends into an "L," its exterior changes from a planar architecture to a more volumetric one, whose massing harks back to Le Corbusier's box-like urban houses on pilotis. But for all its Modernist references, F-2 introduces a range of textures singularly suited to intense Mexican sunlight, inviting its rays to catch the horizontal grain of concrete formwork, to cast dark shadows on volcanic rock, and to highlight the sharp-edged, overscaled gravel that borders long stretches of the house. (Intimately linked to the wall-making process, this gravel happens to be the shards left over when stone was chiseled and shaped for the basaltic planes.)

Within F-2's 5,400 square feet are relatively few rooms: The entry level features generously scaled living and dining areas, a den, and an open kitchen; the uppermost floor has three bedrooms; and the lowest level, a library and game room. Just as the perimeter walls selectively mask inward and outward views, vertical planes within the building direct lines of sight. The living room's large corner-wrapping window rises from the floor, only reaching waist level, to block out views of the neighbors. In the den, similarly

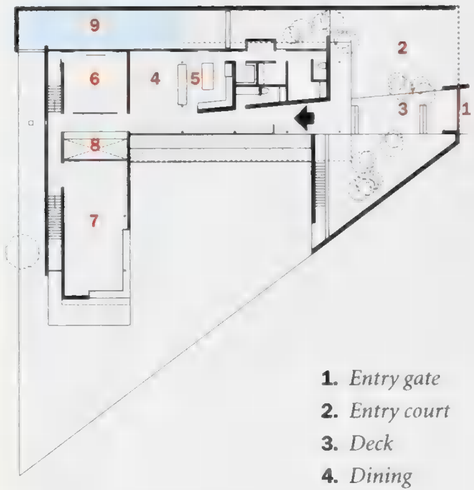
Project: *F-2 House, Mexico City*
Architect: *Adriá + Broid + Rojkind—Miquel Adriá, Isaac Broid, Michel Rojkind, principals; Benjamin Campos, Andres Altesor, Agustin Pereyra, Miguel del Rio, Hernan Cuadra, Paulina Goycoolea, project team*
Engineers: *Salvador Mandujano (structural); Antonio Valeriano (MEP)*
General contractor: *Proyecto Alpha*

A basaltic wall at the house's entry (opposite, bottom left) masks views of F-2's L shape. Just behind this wall (opposite, top), across a teak deck bordered by basaltic gravel, F-2's three-story wing appears. It houses, from top to bottom, the master suite, living room, and game room. Such oblique views are also visible from within the house, through its zones of floor-to-ceiling glazing (opposite,

bottom right). Cuts in the long walls flanking the stair offer glimpses into the master bedroom (top and bottom right). A glass-and-steel bridge spans over the stair (above).

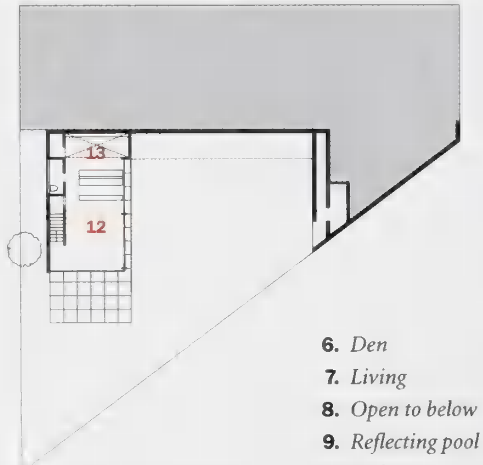


UPPER LEVEL



ENTRY LEVEL

1. *Entry gate*
2. *Entry court*
3. *Deck*
4. *Dining*
5. *Kitchen*



LOWER LEVEL

6. *Den*
7. *Living*
8. *Open to below*
9. *Reflecting pool*
10. *Bedroom*
11. *Master bedroom*
12. *Game room*
13. *Library/study*

Apertures throughout the house control lines of sight—as in the master bedroom (opposite, top) and the living room (this page). In the living room, a bookcase of African wenge wood (below) passes from the entry level through a cut in the floor to the library/study below. The open kitchen and dining area (opposite, bottom) overlooks a reflecting pool beside a basaltic wall.

low fenestration captures just a reflecting pool, filled with basaltic shards, and the flickering rays bouncing off it.

Throughout F-2, enclosure and openness play against one another, altering the quality of light, balancing and enlivening the experience of its interiors. In the site's least exposed zones—high up in the master bedroom, for example, or in the entry area, looking out toward the bend in the "L"—heavy walls give way to expanses of glass, drawing the outdoors in.

Some of the most remarkable passages, however, involve F-2's long, interior vistas. The house's west end forms a deep crevasse: two parallel concrete walls, nearly 70 feet long and 30 feet high, between which a straight run of Mayan walnut steps ascends. Spanning three stories, the stair offers oblique, layered, and changing views of sleeping and living rooms—all glimpsed through cuts in the concrete walls. High up at the south end of the chasm, a dramatically precipitous glass bridge crosses over the stairway. Transverse steel beams, under clear panes of mullionless glass, brace the tops of the tall parallel walls. As you look up, the glazing seems to disappear, and you feel as if you're in the open air, beneath the sky, held powerfully between two concrete monoliths. In this very spot, the climbing wall would have stood. And here, F-2's language of walls, its entire interior landscape—or "geology"—suddenly snaps into focus. Though the climbing feature went by the wayside, the owners still make an ascent, every day, to the summit. ■

Sources

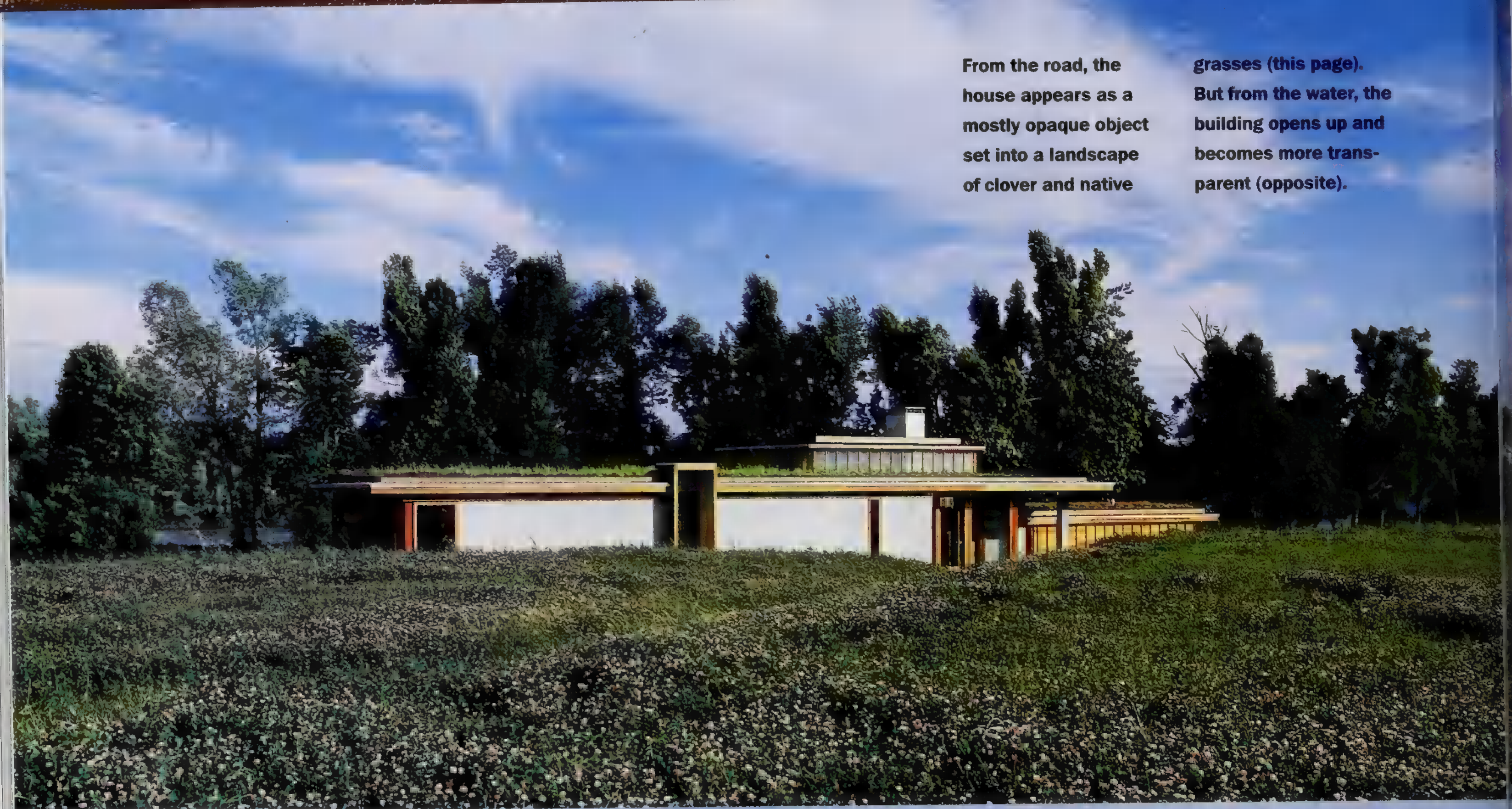
Concrete: *Cemex*

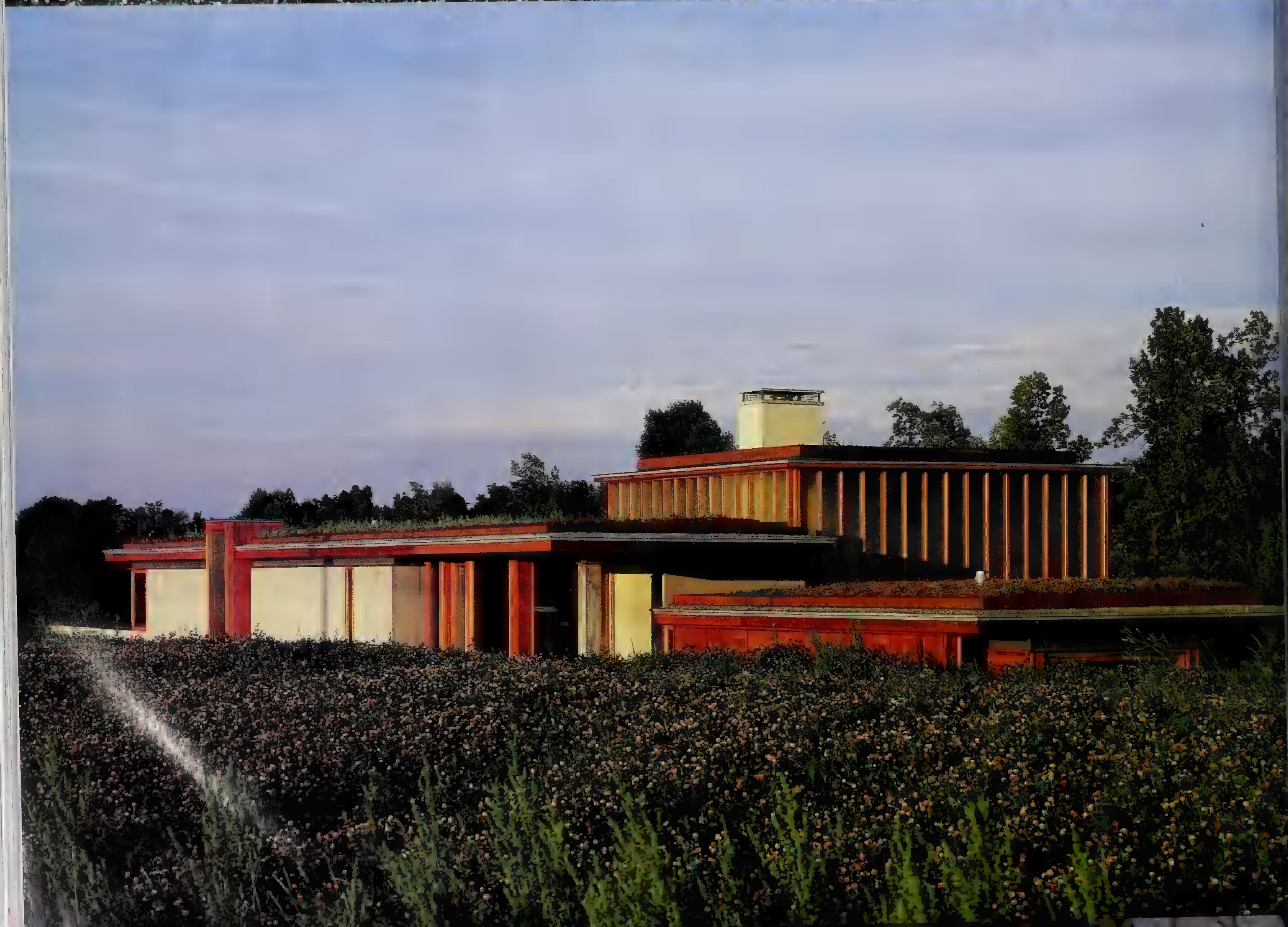
Lighting: *Targetti*

Stone floors: *Ponzanelli (travertine)*

WWW For more information on the people and products involved in this project, go to Projects at **architecturalrecord.com**.

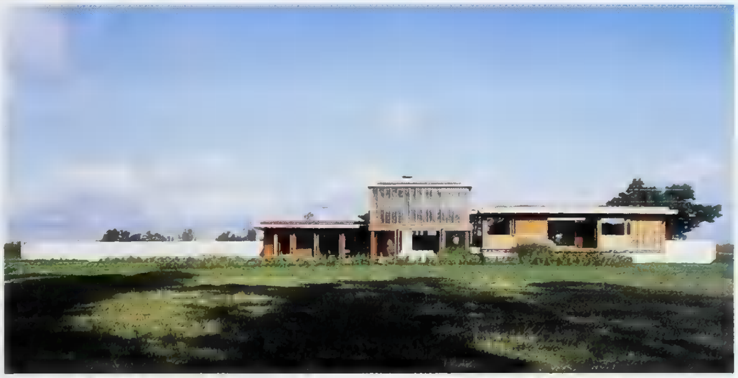
From the road, the house appears as a mostly opaque object set into a landscape of clover and native grasses (this page). But from the water, the building opens up and becomes more transparent (opposite).





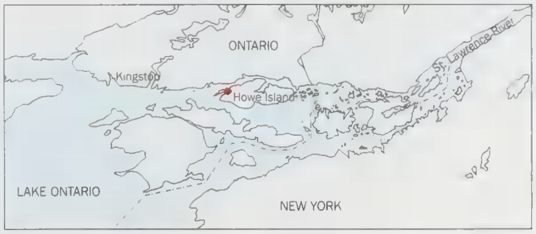
Shim-Sutcliffe blends natural with artificial landscapes around its rural **ISLAND HOUSE** and urban **TOWER HOUSE**

ISLAND HOUSE



By Clifford A. Pearson

The architects didn't anticipate their clients swapping homes for a weekend. But the work of the husband-and-wife team Brigitte Shim and Howard Sutcliffe has a way of reaching out and making surprising connections—between indoors and out, between buildings and their settings, and even among strangers.



The only access to Howe Island is by boat.

Although the Island House and Tower House moved forward at roughly the same time, they didn't seem much alike at first. After all, a wood-and-glass vacation home on an island in the St. Lawrence River has little in common with a concrete-board "tower" squeezed onto a tight urban lot in Stratford, Ontario. Closer inspection, however, reveals a common architectural DNA, expressed differently in response to environmental circumstances and client needs.

Perhaps the most important trait of both houses is an ability to link construction with context, to connect architecture with its historical, cultural, and physical surroundings. You sense this quality most immediately in the Island House, a 2,000-square-foot residence that stretches out along the land like a Frank Lloyd Wright design moved north of the border. Set in one of the Thousand Islands on a rolling meadow of clover off a country road, the building seems to have an easygoing relationship with its habitat. "Spread out, kick back, open up," it seems to say. "Have another glass of wine and enjoy the view of the water."

Slowly, though, the house reveals a more complex order. That gentle field of natural grasses, clover, and wildflowers turns out to be the work of meticulous planning, and that lazy path to the front door the result of extensive earth moving to create rolling berms on either side. When Shim and Sutcliffe did the landscape design, they positioned the house so that the summertime clover blocks views of the road and turns the front yard into a continuation of the farmland across the way. They planted two of the house's roofs with wildflowers and created a "dry garden" of crushed limestone and rock excavated from the site during construction.

But what, at first, seems to be a house blending seamlessly with its setting turns out to be an object consciously inserted into the land. A 200-foot-long, poured-concrete retaining wall runs along the front or north side of the house and extends beyond it to define an outdoor room where clover gives way to paving. Behind the house, facing a bay of the St. Lawrence River, a reflecting pool separates building from land.

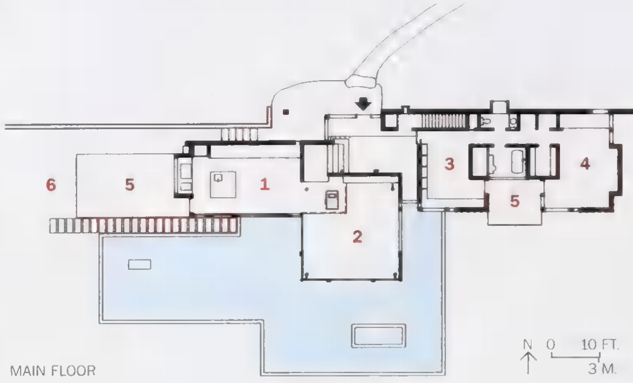
"We wanted to address the existing landscape but also create a new landscape within it," explains Shim. So, in addition to planting native grasses and restoring a wetlands, the architects set small rectangular "islands" of rushes within the reflecting pool and created paved and decked outdoor spaces. The artificial landscape informs the natural one, initiating a dialogue about architecture and its relationship to this place's history as farmland, fishing venue, and now vacation area.

The clients, who live in urban Pennsylvania but have long kept a boat on the St. Lawrence, asked Shim and Sutcliffe for a "clean, open, modern house." Simple materials such as wide planks of Douglas fir with vertical battens, mahogany, concrete, and slate establish a relaxed aesthetic, appropriate for a vacation home. In plan, the house is straightforward: Two horizontal wings (one containing bedrooms and a study, the other the kitchen and dining room) flank a cubic living space rising from the center of the composition. At its base, looking south to the water, the living room is wrapped in clear glass but above is translucent fiberglass. "We thought of the living room as a Noguchi lantern," says Sutcliffe.

While most of the house is a wood-frame structure, the living-room volume is framed in steel. Cruciform and cylindrical steel columns, set back from the building's skin, allow two glass corners here to slide open, creating a spatial flow between outdoors and in.

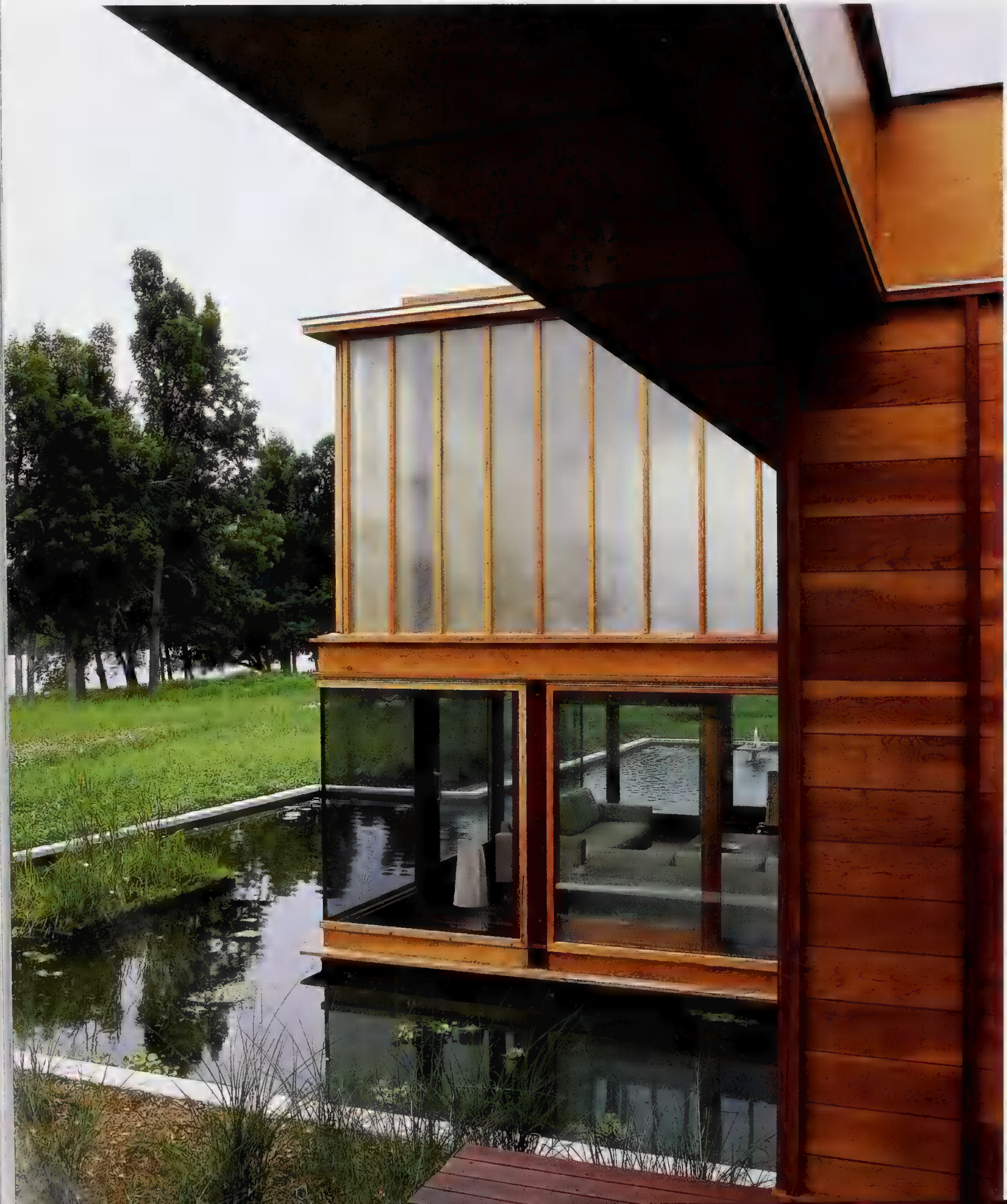
Project: *Island House, Thousand Islands, Ontario, Canada*
Architect: *Shim-Sutcliffe Architects—Brigitte Shim, Howard Sutcliffe, principals; Donald Chong, Jason Emery Groen, John O'Connor, Min Wang, Theo Kelaiditis, project team*
Engineers: *Blackwell Engineering (structural); Toews System Design (mechanical)*
General contractors: *Peabody and Sheedy Construction*

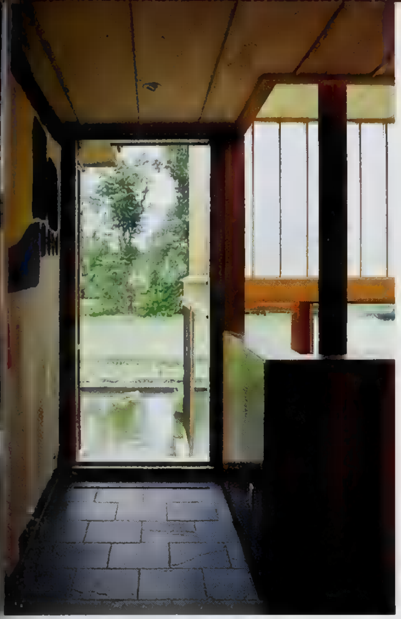
ISLAND HOUSE



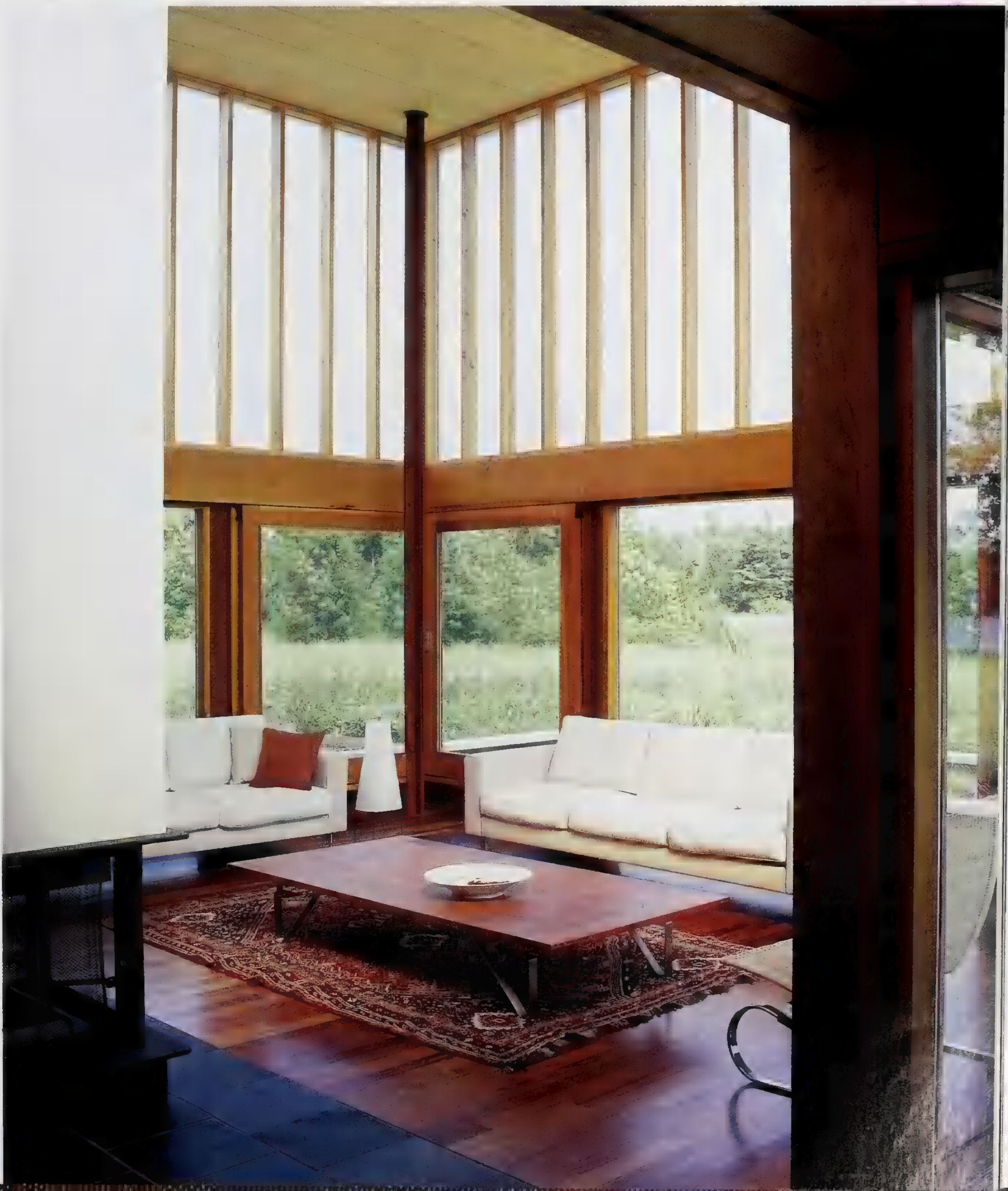
1. *Kitchen*
2. *Living*
3. *Study*
4. *Master bedroom*
5. *Deck*
6. *Dry garden*

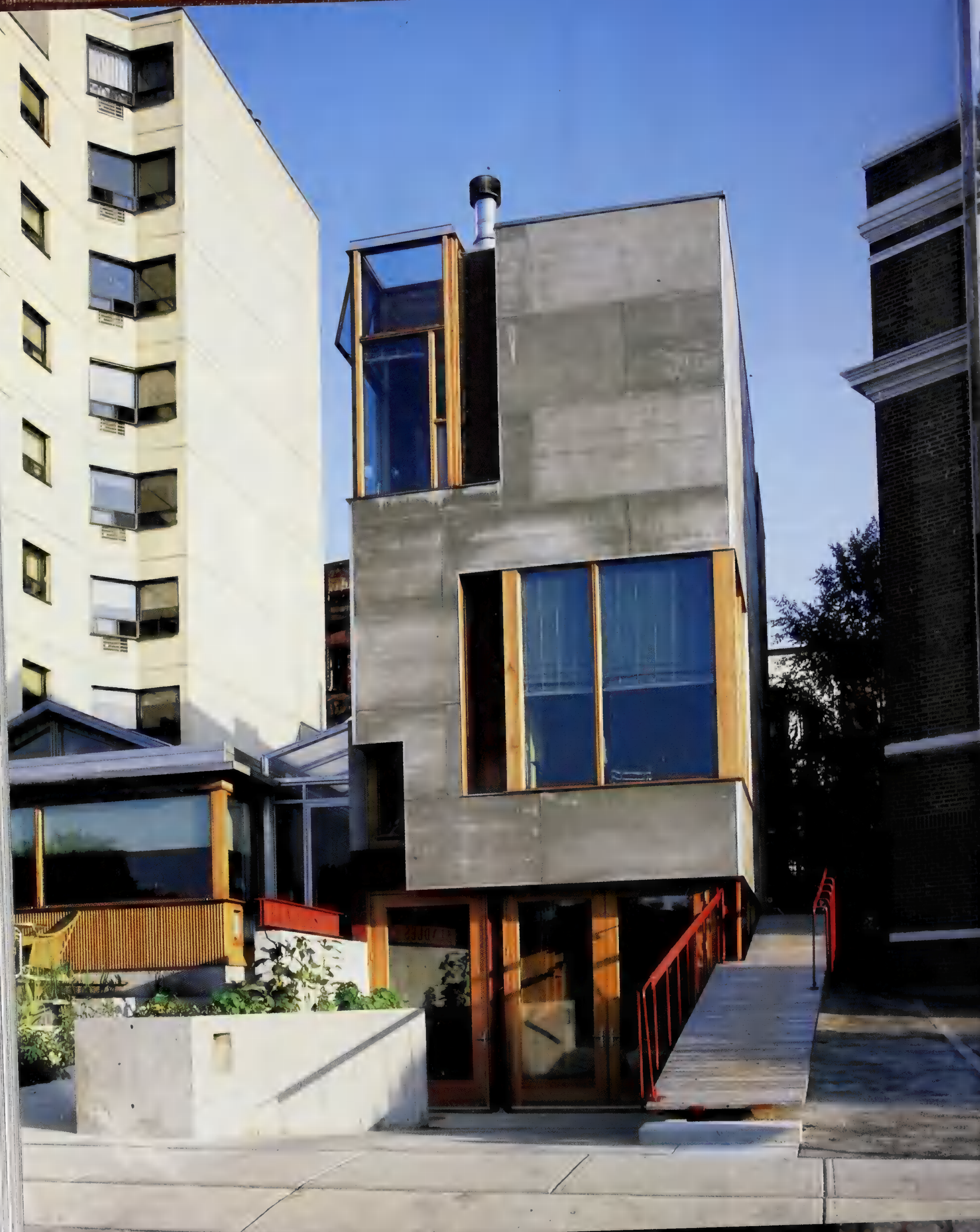
The architects designed a variety of outdoor spaces, purposely mixing and sometimes blurring the distinctions between naturalistic landscapes, such as a restored wetland, and artificial landscapes, such as a reflecting pool with rectangular "islands" of bulrushes (this page). Planted with wildflowers, the house's two lower roofs become "abstract meadows," says Shim.

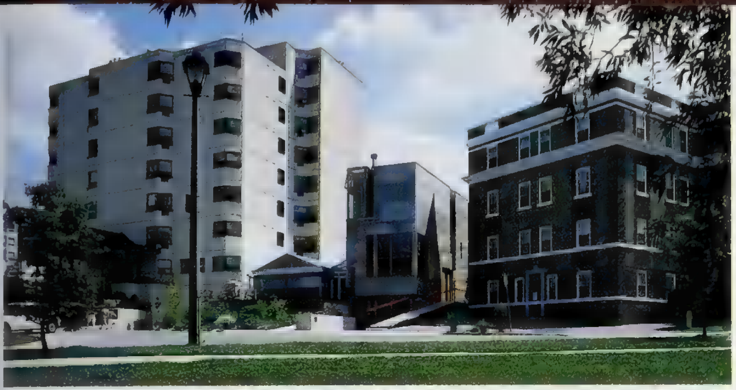




A fireplace anchors the interior, but the living room's translucent shell gives the space the sense of floating in the landscape (right). Water in the pool acts as a visual and metaphorical link to the river. The entry hall (above left and right) frames partial views of the yard and the river beyond but obscures other views that become visible from the living room.







As the Internet has shown, communities can develop among people who never meet face-to-face. A similar, though less technologically assisted, bond developed between the Pennsylvania couple and the client in Stratford as their houses moved from idea to reality. They all followed the progress of the two residences and found themselves drawn into the congenial little universe of Shim-Sutcliffe clients.

In Stratford, Shim and Sutcliffe faced a completely different set of challenges. The client, who owns a restaurant and cooking school operating out of an old boathouse downtown near the Avon River, wanted to build a house next door on a three-car parking lot. With an eight-story precast apartment building on one side and a five-story neo-Georgian apartment block pressing in on the other, the new house and its attached restaurant/cooking school had to negotiate tricky changes in scale, materials, and function. No rolling meadows of purple clover here: just an urban jumble.

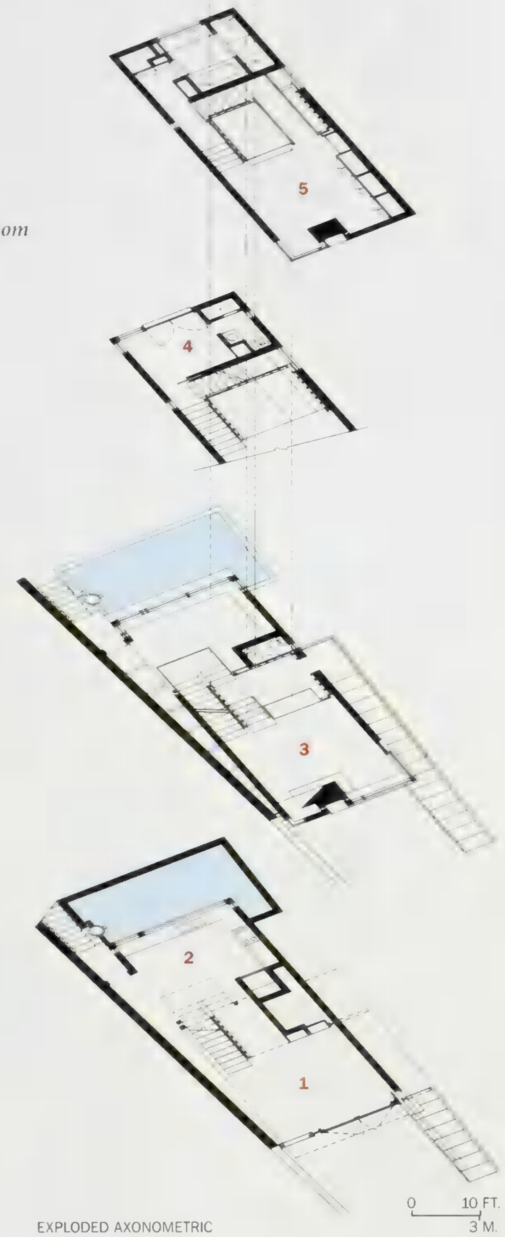
Using a multipart strategy, the architects slipped a four-level, 40-foot-wide house onto the site and connected it to the restaurant with a gently sloping corridor, lined on one long side by a canted, freestanding, poured-concrete wall. Although the corridor provides access only to the restaurant, the concrete wall—a nonstructural element—is an important visual link to the house, which is clad in concrete board. Translucent greenhouse glazing above the corridor as well as outdoor materials preserve the memory of the outdoor path that once ran alongside the restaurant. The result is like a zipper, fastening restaurant to house, indoors to out.

Although the house is much smaller than the apartment buildings nearby, its concrete cladding and sculptural form give it enough visual heft to stand up to its neighbors. Shim and Sutcliffe also added a bay to the front of the restaurant, providing an extra 250 square feet of dining area and more directly addressing the street. Although modest and simple, the new front serves as a key piece in the urban ensemble, helping everything snap into place. For the area behind the house, the architects redesigned a tiny existing courtyard and added an L-shape water garden that gives the new building some space to breathe. With its country cousin, the Tower House shares a vocabulary of wet and dry landscaping to establish a complex relationship to its context—engaging in places, aloof in others.

For the inside, the architects created a fluid series of spaces, just as they did in the Island House. But instead of running horizontally, the interiors of the Stratford house unfold vertically, pinwheeling around a three-story-high atrium topped by a clear acrylic skylight.

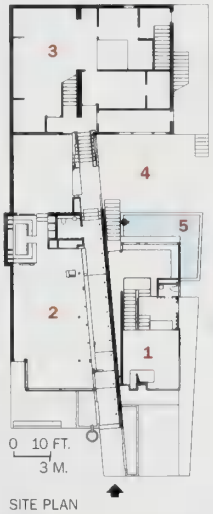
Project: *Tower House, Stratford, Ontario, Canada*
Architect: *Shim-Sutcliffe Architects—Brigitte Shim, Howard Sutcliffe, principals; Donald Chong; Jason Emery Groen, John O'Connor, assistants; Min Wang, Theo Kelaiditis, drawings; James Song, model*
Engineers: *Blackwell Engineering (structural); Toews System Design (mechanical)*
General contractor *Dan Paul Design*

1. *Garage*
2. *Kitchen*
3. *Living*
4. *Guest/study*
5. *Master bedroom*

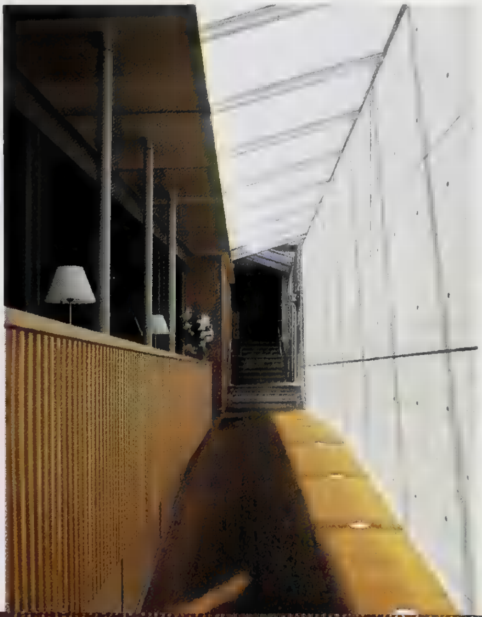


EXPLODED AXONOMETRIC

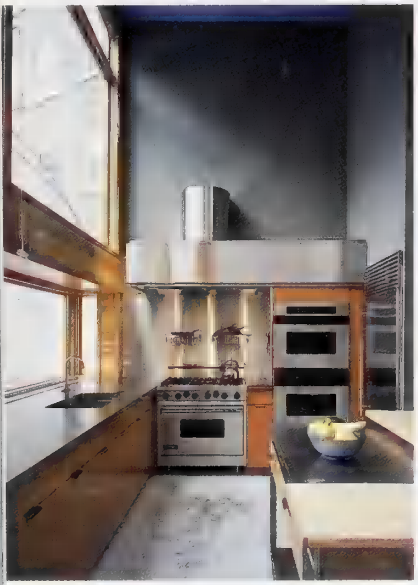
1. *House*
2. *Restaurant*
3. *Restaurant kitchen and services*
4. *Courtyard*
5. *Water garden*

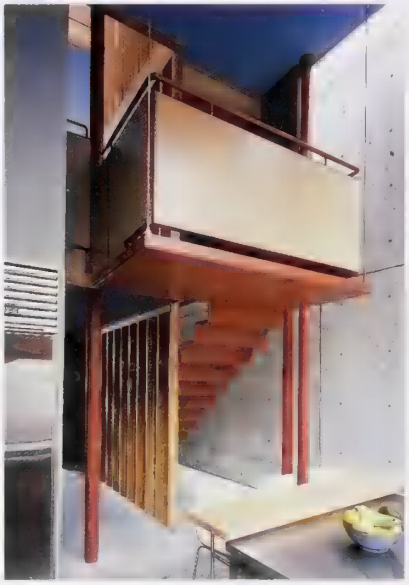


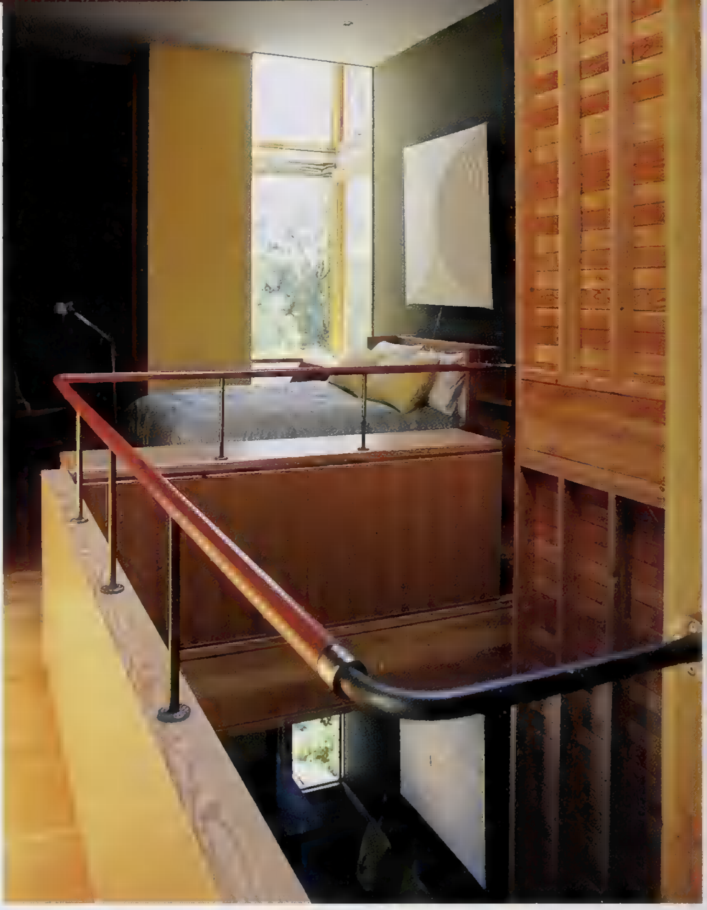
SITE PLAN



An enclosed ramp (left) leads to the restaurant's dining rooms. An outdoor ramp on the other side of the property (not shown) provides access to the house. The sculptural quality of the "tower" and a new front for the restaurant help the pair stand up to their bigger neighbors (opposite and top left).







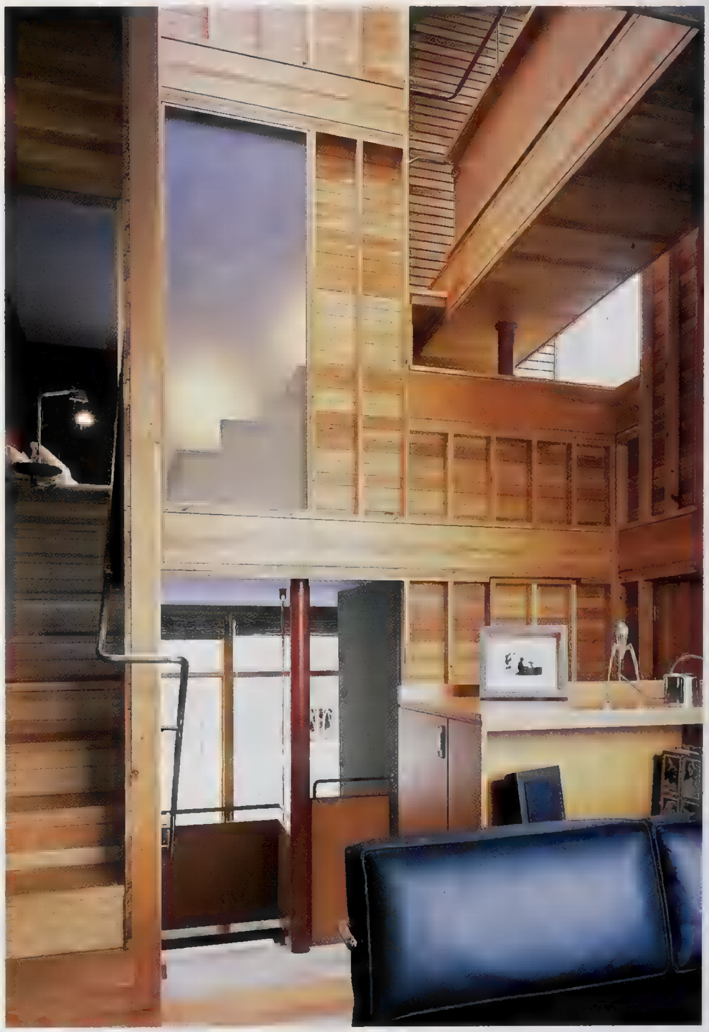
A two-story kitchen (above left and right) allows students to watch from a balcony. Most rooms feed directly off the central atrium (right).

PHOTOGRAPHY: © STEVEN EVANS (TOP LEFT AND CENTER, AND BOTTOM RIGHT); JAMES DOW (TOP RIGHT AND OPPOSITE)

"Since it was designed for one person, it's really one space that just spirals up and around," says Shim. Indeed, the house has only two interior doors: a sliding door to the guest room/study that's usually open and one to the powder room.

Structurally and spatially, the house works as two stacks of rooms on either side of the atrium. The front half contains a garage below grade, and a 12-foot-high living room and master bedroom, while the back portion encloses a two-story-high demonstration kitchen for the cooking school, a guest room/study, and a master bathroom. The separation of front from back allowed the architects to stagger floors, so you climb only part of a level at a time and experience the house as a continuous series of spaces. While most of the house is framed in wood, a steel moment frame hidden in a side wall and a mastlike steel column partially exposed on the front facade hold everything together.

Like college alumni who meet only after they graduate, the clients for these two houses now feel a common bond forged by the process of creating architecture. While exploring the complex web of relationships between the built and natural environments, the new and the existing, the clients and their architects deepened their understanding of how seemingly unrelated things connect. Shim-Sutcliffe's work has always presented design as a continuum in which one discovery leads to another. So it isn't surprising that these independent commissions turned out to be flip sides of the same architectural coin or that the clients would want to try living (for a weekend or so) at the other one's place. ■



Sources

Translucent fiberglass: *Graham Products (Island House)*

Green roof system: *Soprema*

Douglas fir windows: *Sashmen*

Cement-board panels: *Macmillan Bloedel (Tower House)*

Modified bitumen roofing: *Soprema*

Greenhouse glazing: *Jonckman*

Douglas fir windows: *Loewen Windows*

Low-voltage lighting: *Eurolito*

French limestone tiles: *Enmar*

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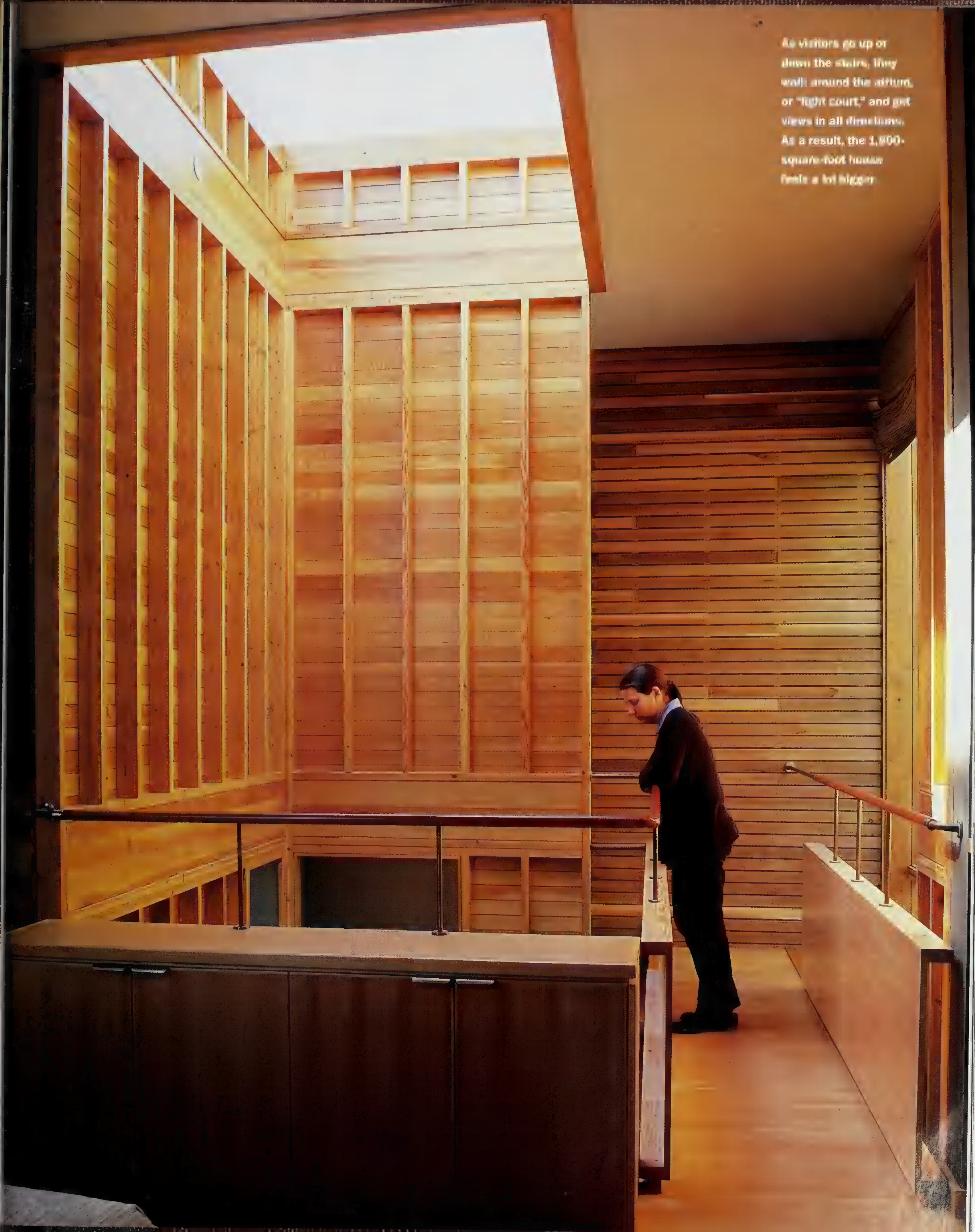
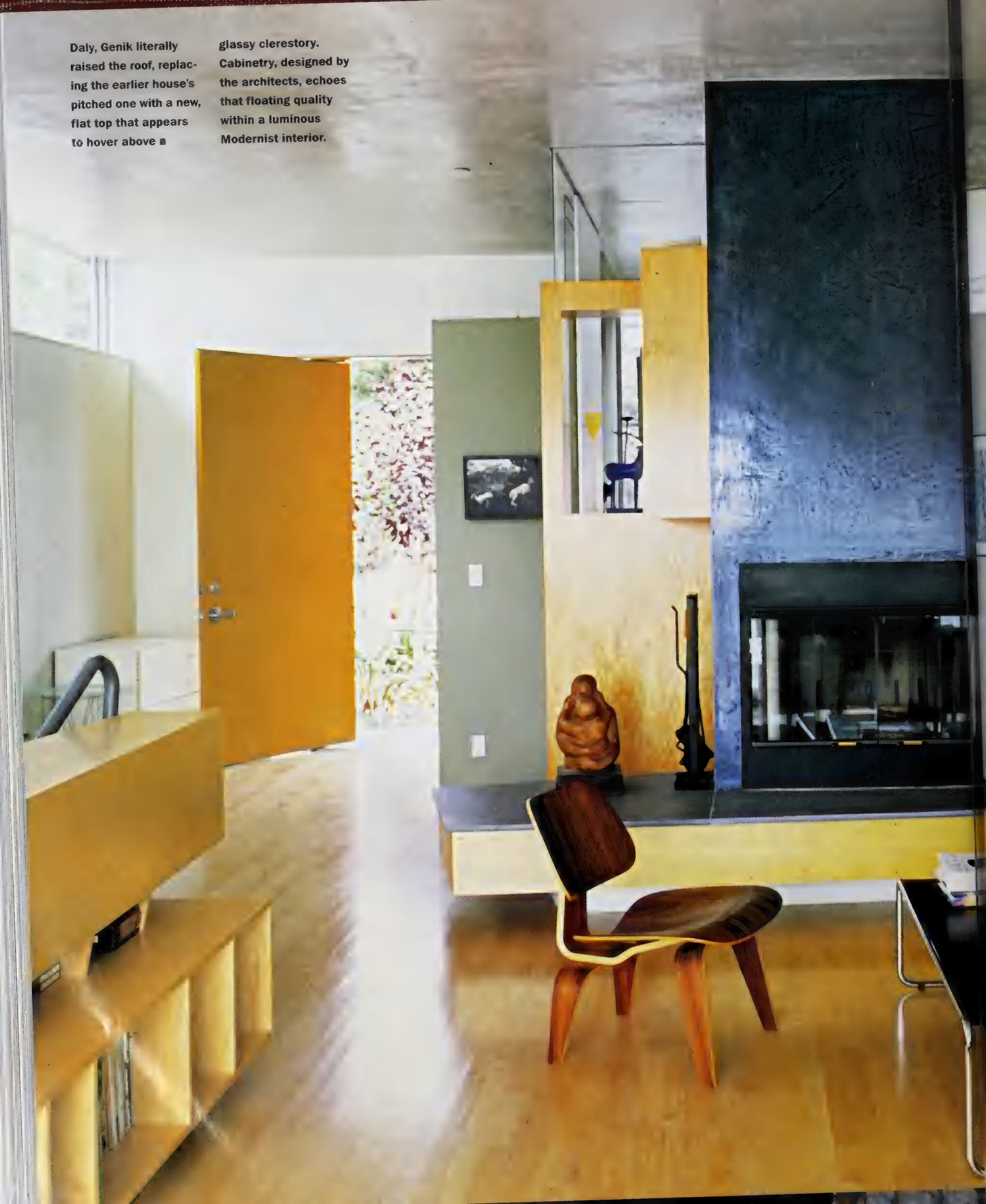
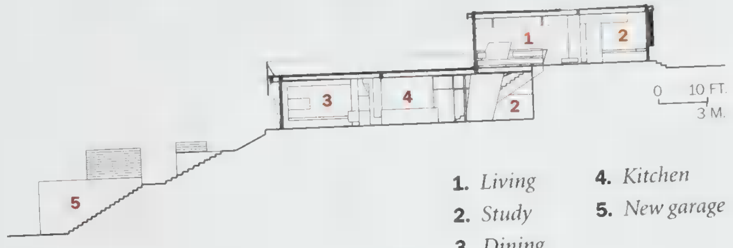


As visitors go up or down the stairs, they walk around the atrium, or "light court," and get views in all directions. As a result, the 1,800-square-foot house feels a lot bigger.

Daly, Genik literally raised the roof, replacing the earlier house's pitched one with a new, flat top that appears to hover above a glassy clerestory. Cabinetry, designed by the architects, echoes that floating quality within a luminous Modernist interior.



Daly, Genik Architects deftly reincarnates a SANTA MONICA bungalow



1. *Living*
2. *Study*
3. *Dining*
4. *Kitchen*
5. *New garage*

SECTION A-A

By Thomas Hines

The Ocean Park district of Santa Monica, California, is a small but historically rich neighborhood—one resonant with images from the long, still-vital tradition of Southern California Modernism. Within a few blocks of each other are Irving Gill's pioneering 1919 Horatio West Court and the home of the late critic Esther McCoy, the midcentury doyenne of Los Angeles architectural culture. (Here, she engaged Rudolph Schindler for modest remodeling.) Nearby is the studio where Richard Diebenkorn produced his luminous *Ocean Park* paintings—a series of abstractions evoking the local coastal landscape.

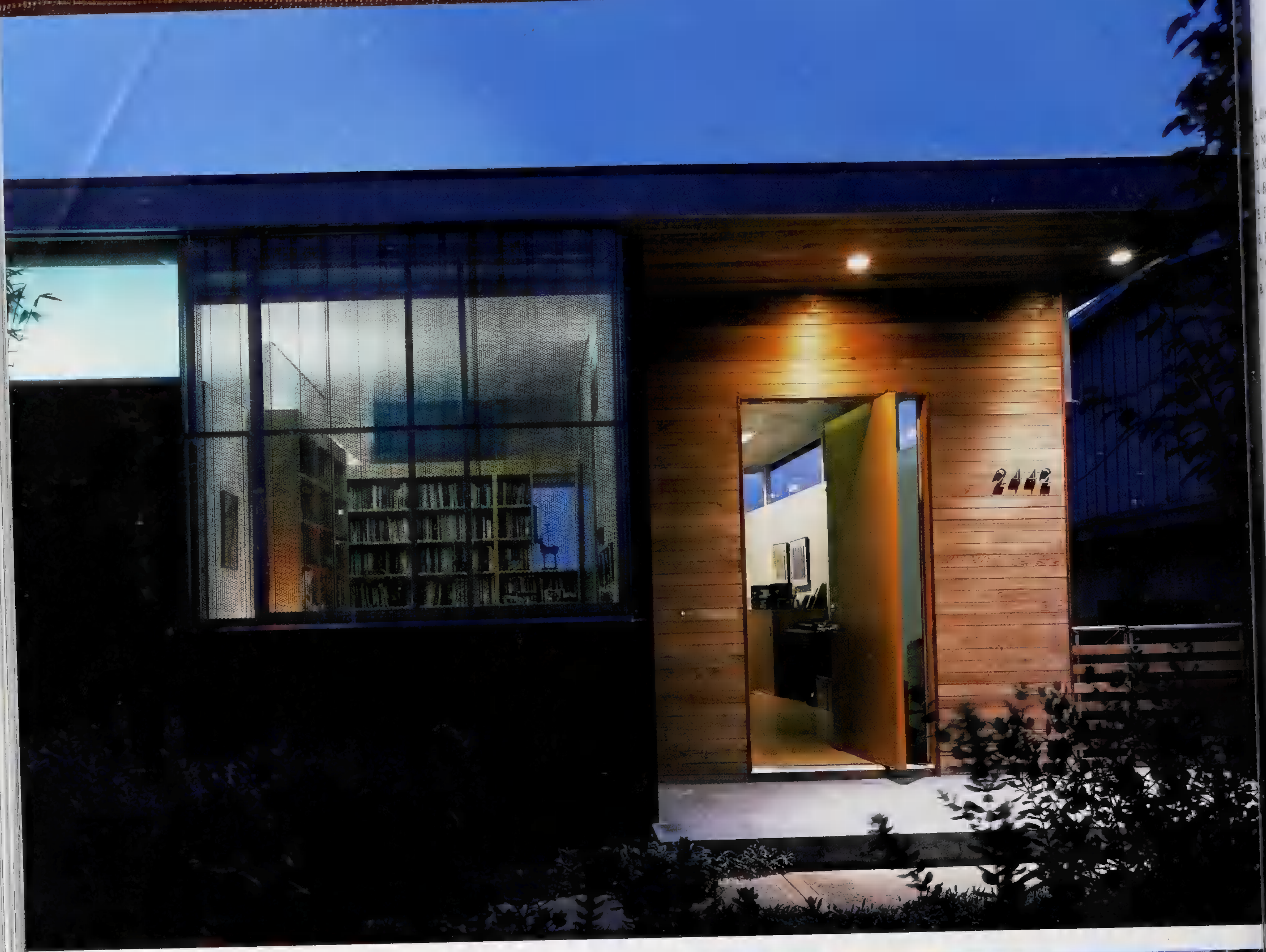
In this stimulating but demanding context, Kevin Daly, AIA, of Daly, Genik Architects, transformed and enlarged an existing early-20th-century bungalow, creating a house that respects its Modernist context and geographical setting—without any sense of mimetic replication. Genealogically, Daly, Genik's Beverley House recalls the Case Study Program, which sponsored nearby houses by Richard Neutra, Eero Saarinen, J.R. Davidson, and Charles and Ray Eames. While architectural cognoscenti can delight in the house's multiple references to this tradition—open planning, flat roofs, ribbon windows, fluid integration of inside and out—this building speaks directly in its own clear voice to the owners' programmatic needs and the architects' contemporary vision.

Fronting a hilltop street, amid closely spaced homes, Beverley House looks west, over a neighborhood park to the Pacific Ocean beyond. The building is larger than its trimly modest street elevation would suggest. Its entry level includes a generous living room, large deck, small study, and suite of family baths and bedrooms, designed for a philosophy professor, her entertainment-lawyer husband, and their 11-year-old son. A compact entry hall merges with a stairway leading down a flight to a large kitchen and dining area, a guest room, and a study. Much of the house offers westward views toward the ocean and seacoast. In the volatile Los Angeles building market, such views are protected from blockage by the valued city park below.

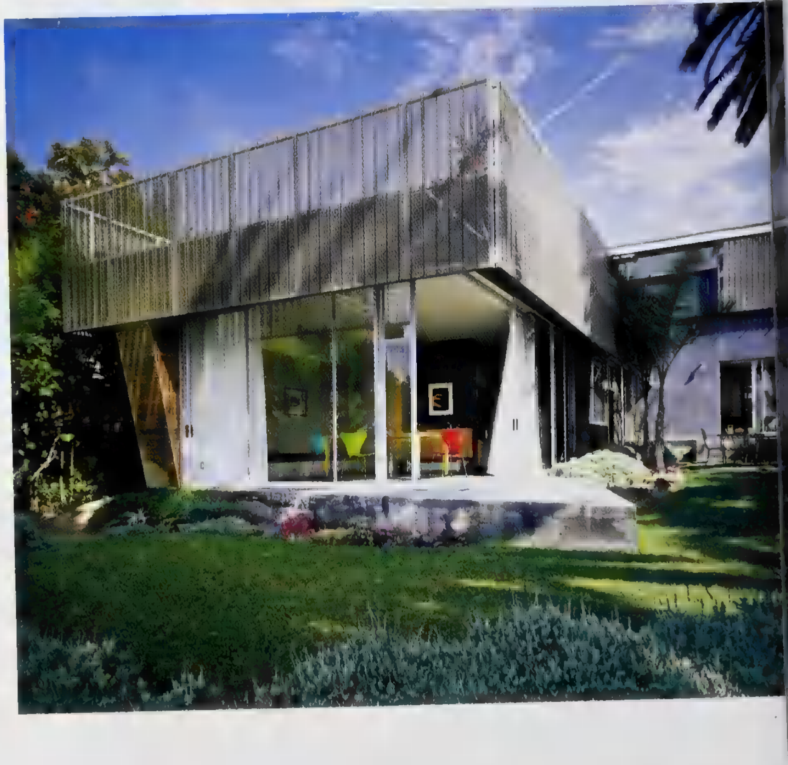
Thomas Hines, a professor of history and architecture at UCLA, is the author of Irving Gill and the Architecture of Reform *(2000).*

Project: *Beverley House, Santa Monica, Calif.*
Architect: *Daly, Genik Architects—Kevin Daly, AIA, principal in charge; Christopher Genik, AIA, consulting principal; Scott Allen, Jacki Hah, Elinor Nissley, Sarah Pelone, George Tolosa, design team*
Engineers: *William Koh & Associates*
General contractor: *Bonura Building*

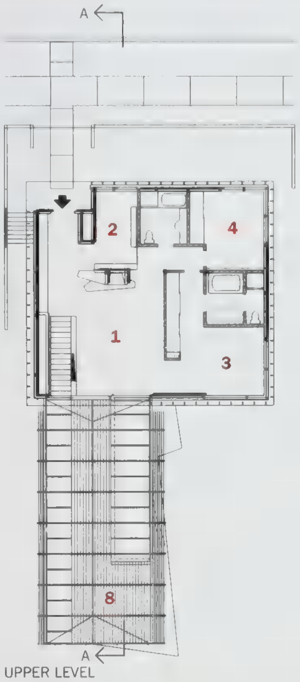
PHOTOGRAPHY: © JOSHUA WHITE (EXCEPT AS NOTED)



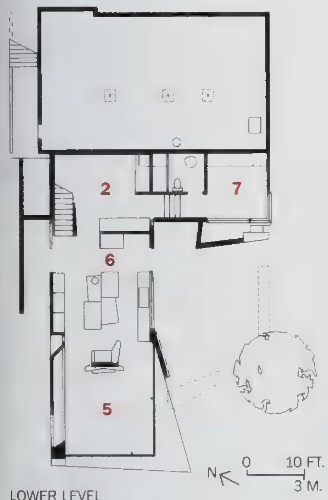
Cedar cladding with a pivoting door (above) replaces the streetfront garage (left) of the original house (bottom left). A veil-like sunscreen of perforated steel (above) moves on a track. The same sheer but paradoxically rigid material wraps the new deck above the dining area (right). The stair and supporting fin wall (opposite three) were cast monolithically in concrete.



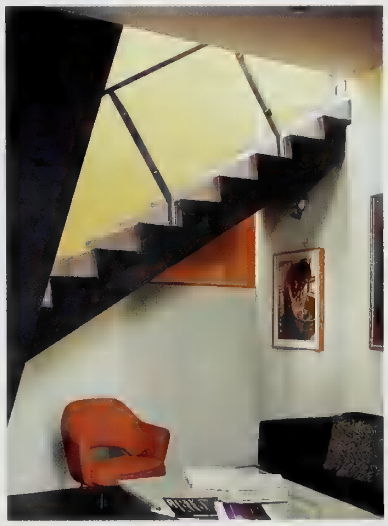
1. *Living*
2. *Study*
3. *Master bedroom*
4. *Bedroom*
5. *Dining*
6. *Kitchen*
7. *Guest*
8. *Deck*



UPPER LEVEL



LOWER LEVEL



The place now reads as a totally new building, but it is technically and legally a remodel, since its upper level occupies the footprint of the preexisting bungalow—which, in yet another remarkable connection to the region's cultural history, once belonged to the flamboyant evangelist Aimee Semple McPherson. Although that 1,150-square-foot building was not landmarked, the architects had incentive to keep at least 50 percent of its exterior framing. Whereas a teardown would have decreased the buildable envelope, reuse of that framing entitled the architects to the original zoning allowance. Daly, Genik thus retained the footprint and most of the perimeter wall studs for their upper floor, but demolished the old pitched roof. At 4-foot intervals, they inserted steel columns, taller than the existing studs, to support a flat roof and allow for a band of clear glass between old and new roof levels. This configuration gives their roof a light, floating quality.

Equally subtle design moves enrich the generally straightforward plan, now encompassing 2,800 square feet. On the front elevation, a perforated stainless-steel sunscreen—sheer and draped like a curtain—hangs from the eaves on tracked rollers. Operated by an indoor crank, it can slide sideways to veil, or to completely reveal, a large window. Elsewhere, windows pivot outward from exterior corners or slide back to create beguilingly open corners—made feasible by the absence of screens in this virtually bugless coastal climate. Obliquely angled fireplace hearths and outdoor stairs and terraces counter the building's dominant orthogonality. A large, cast-concrete fin wall rises like a megalith from the study at the bottom of the stairs to an attenuated peak above the stair railing in the living room. Rough marks left by wooden forms help make this piece of structural sculpture—cast monolithically with the stair—one of the design's most artful elements.

In a rather densely built neighborhood, on a lot measuring only 50 by 150 feet, the architects skillfully achieved streetfront privacy with openness in the back. The clients, serious cooks, especially enjoy the large and amply equipped kitchen. Integrally connected to the dining room, this favored family area opens, in turn, to the garden. With comfortable, light-filled spaces that blur indoor/outdoor boundaries, Daly, Genik created a house that fits right into the Modernist tradition of Southern California living—functionally, aesthetically, and symbolically. ■

Sources

Door: *Paneltec (sliding aluminum honeycomb)*

Plumbing: *Kohler (faucets, sink, tub); Moen(tub, shower); Kindred (sinks)*

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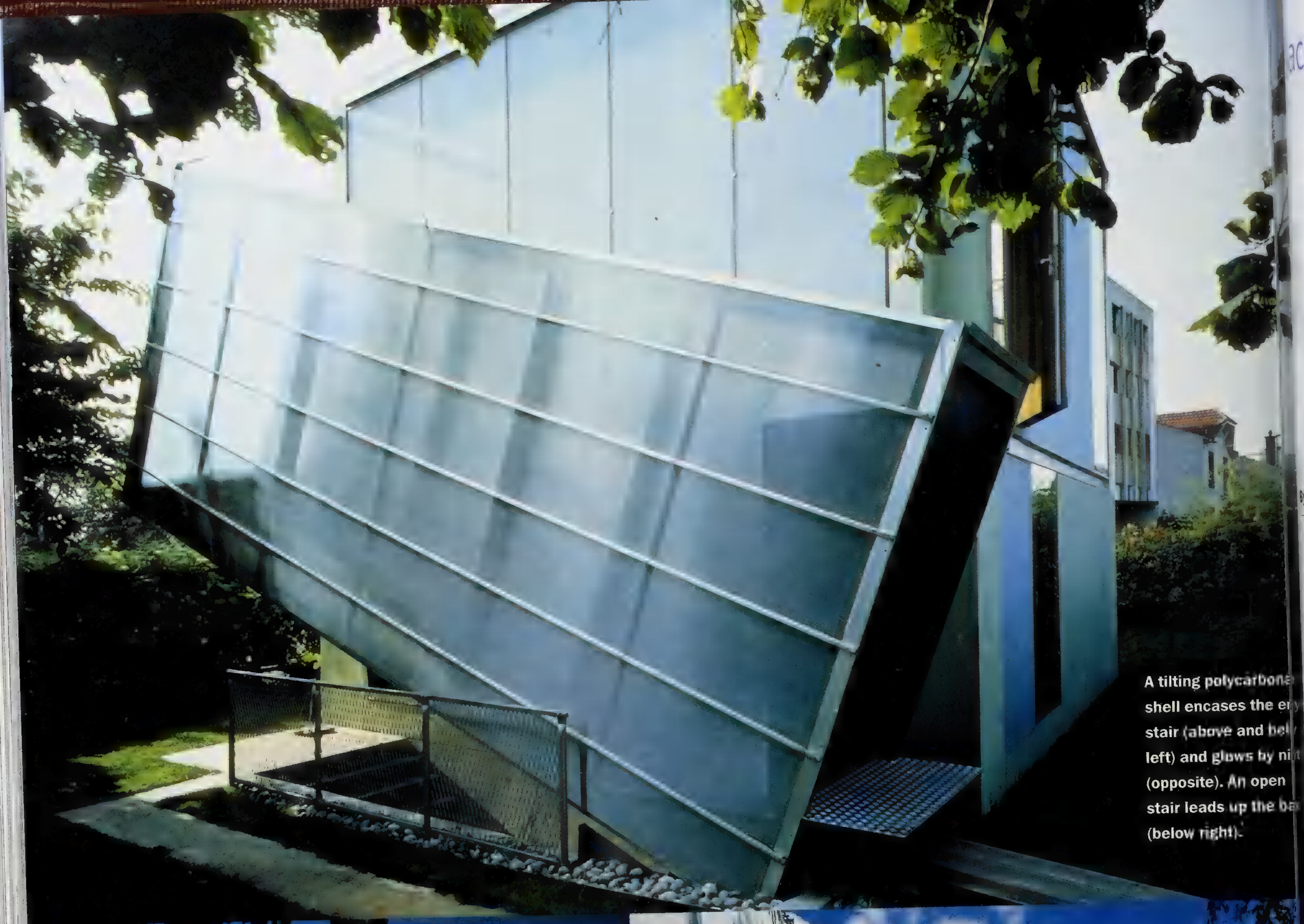

A tilting polycarbona shell encases the en stair (above and bel left) and glows by ni (opposite). An open stair leads up the ba (below right).

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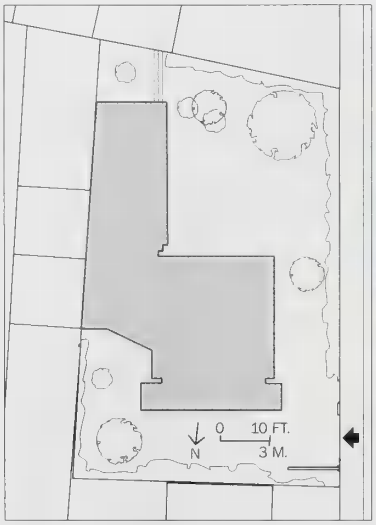
S

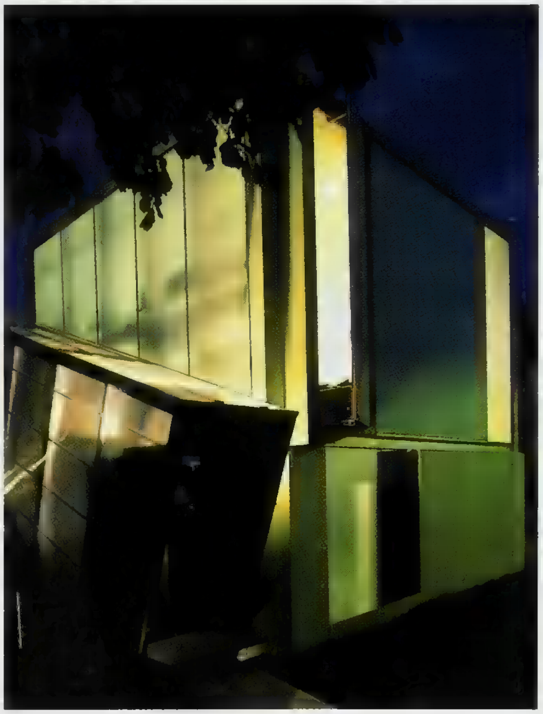
By Cla

A

Jacques **Moussafir** inventively skews the symmetry of a cube with his **STEIN-FLEISCHMANN HOUSE** near Paris

By Claire Downey





Alternative housing in Suresnes, France, usually means a *péniche*, or houseboat, on the Seine. Converted barges, which often resemble small mansions and probably don't see much sailing, line the quay of this affluent suburb, just 5 kilometers west of the Champs-Elysées. Here, bland, white apartment blocks, interspersed with traditional shuttered homes, abound. Hard not to notice, then, the Stein/Fleischmann House, set behind an aluminum gate, with its facade of opaque glass, tinged light green, and its main staircase, a pitched, polycarbonate-sheathed volume that glows at night. Although the house measures only 2,045 square feet, it conveys a sense of procession and expectancy.

At once connected to the urban fabric and detached from it, the building stands at the city's edge, just before Suresnes breaks down into primarily freestanding houses. The architect, Jacques Moussafir, wanted the house to parallel the street with enough mass to hold its own among nearby apartment buildings, while still retaining the intimacy of a single-family home.

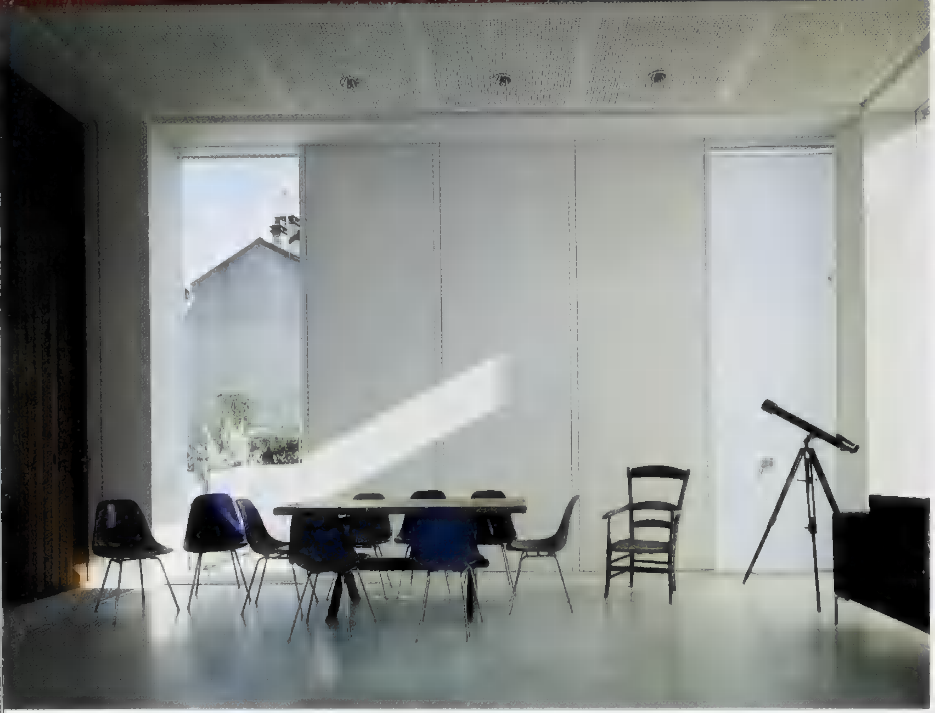
The family here is a young couple—she's an artist; he's in advertising and passionate about architecture—and their two children. When they called on Moussafir, now 44, he had just set up his own practice after years in the offices of some of France's best-known architects, including Henri Gaudi, Christian Hauvette, and Dominique Perrault. Around this time, Moussafir had designed a school for the arts at the University of Saint Denis [RECORD, November 2001, page 202] that would bring him some international attention. "Still," says Moussafir, "the client—an old family friend—was taking a big risk, as I had never yet completed a project on my own, and their money was tight." After buying the lot, the couple was left with only $180,000 to construct a house and artist's studio.

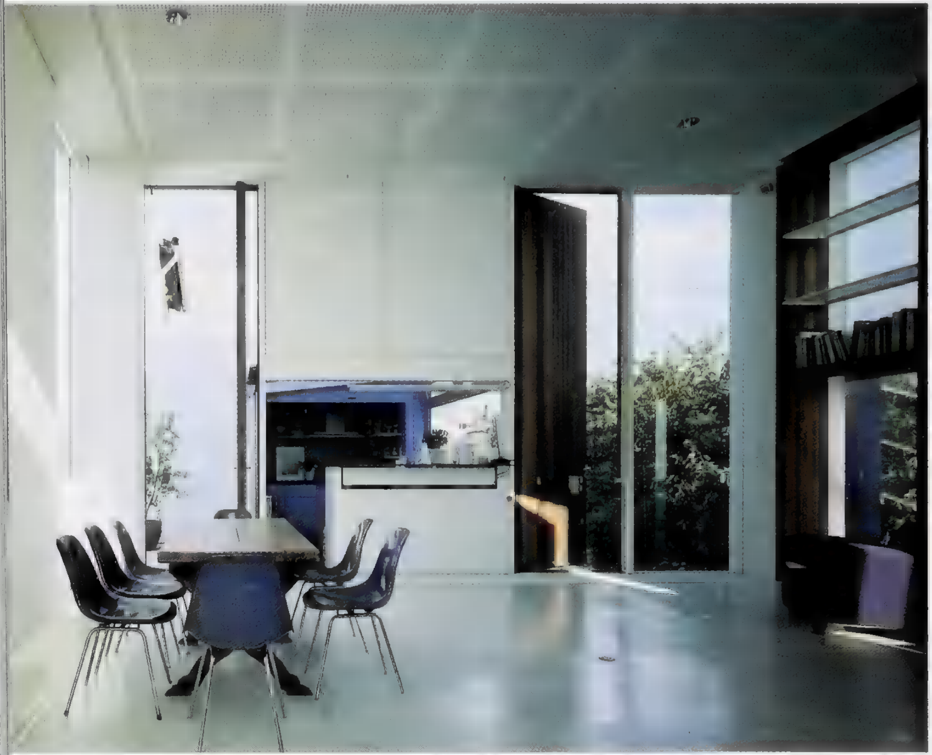
Yet Moussafir achieved a design that moves us up, down, and through its different zones as smoothly as he rolls off his richly accented English. (South African born, he spent part of his childhood in Greece and England before settling in France.) One of the first decisions he made was to put the bedrooms and studio on the ground floor and the living room above. With a thicket of live bamboo, a high wall of iron grillwork, and an aluminum gate separating the site from the street, the bedrooms actually enjoy privacy at the garden level. Each bedroom has a sliding glass door opening directing onto the lawn, as well as thick, wood exterior shutters, which can be pulled closed. The lower-level ceilings are lined in steel decking: formwork intentionally left in place after the upper-level concrete floor slab was poured. Besides its aesthetic qualities, the steel adds rigidity to the living room floor.

The living room itself is a cube, rising 13 feet. Seven full-height vertical openings—five of which are glazed—flood the space with light, yet leave enough solid wall to create a sense of enclosure. Respecting the northern European mania for fresh air, the two unglazed apertures actually have tall doors of tropical Iroko wood, which swing outward. This wood will lighten to gray with exposure, but heartily withstands humidity and temperature change. A railing protects the unsuspecting from a sudden free fall down one story. Even in winter the doors might be open

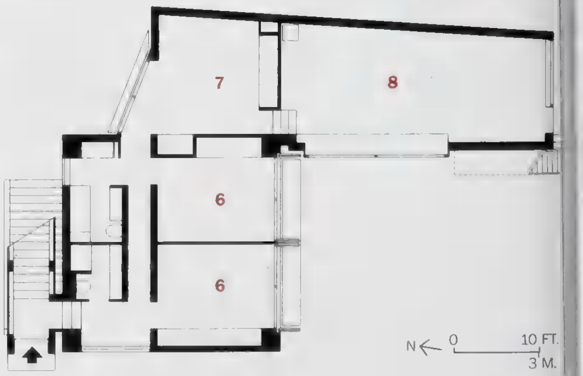
Claire Downey is ARCHITECTURAL RECORD*'s Paris-based correspondent.*

Project: *Stein-Fleischmann House, Suresnes, France*
Architect: *Moussafir Architectes Associés—Jacques Moussafir, principal*
Contractors: *ERMIF (electricity and masonry); La Seconde (timber and metalwork); Dewerpe (glazing); Sanitoit (heating and plumbing)*

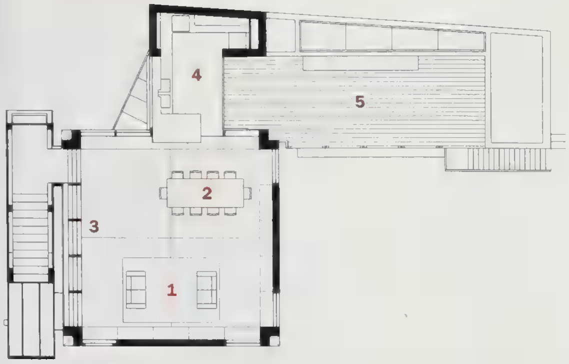




Behind a clear glass panel on the luminous book wall, the entry stair's canted polycarbonate envelope is visible (opposite, top and bottom). The cubic form of the combined library, living room, and dining room is animated by the hinged flaps of Iroko wood doors and by long, vertical slots of fixed glass: apertures that permit an occasional slash of light to cut across the room (above and opposite). The compact kitchen's counter (above and opposite, bottom) cuts horizontally into the volume of this 13-foot-high room.

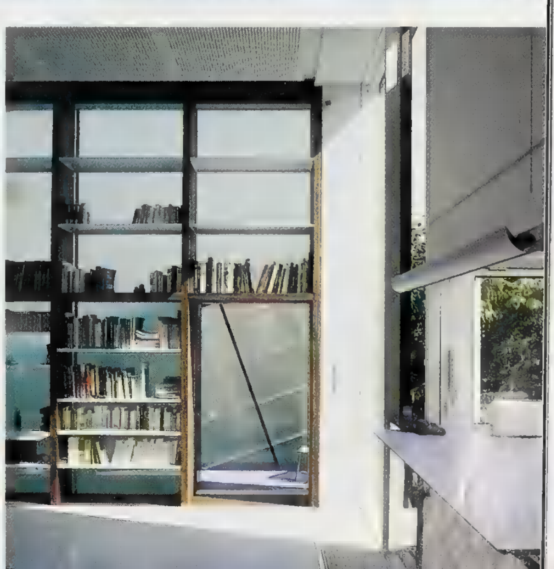


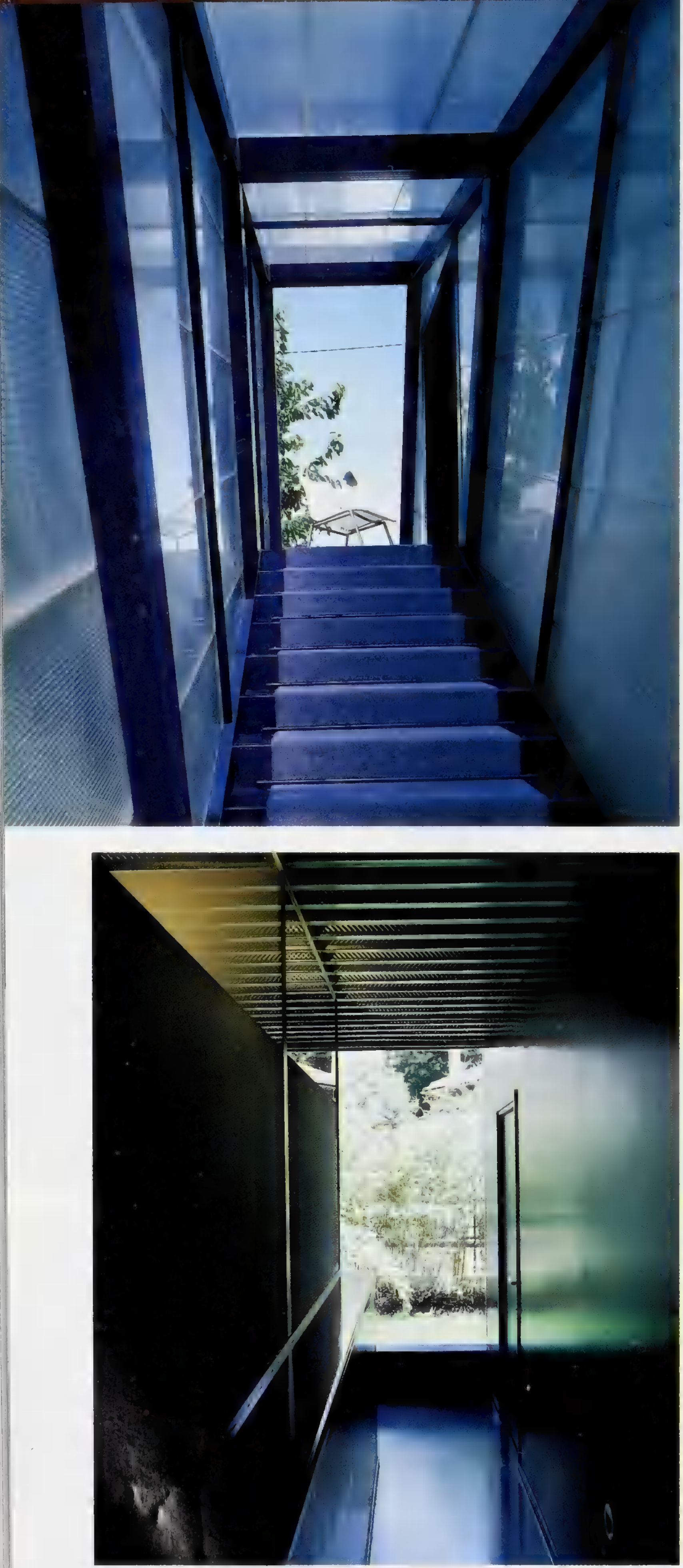
LOWER LEVEL



ENTRY LEVEL

1. *Living*
2. *Dining*
3. *Library*
4. *Kitchen*
5. *Deck*
6. *Bedroom*
7. *Master bedroom*
8. *Studio*





The view of a tree outside is glimpsed at the top of the entry stair (top), with its angled, rhythmic structure accentuating the experience of ascent and arrival. Steel formwork from the upper-level concrete floor is exposed on the lower level's ceiling (bottom).

a crack. The pairing of wooden doors in various states of closure, with their fixed-glass windows, skews the symmetry of the cube from the street, unexpectedly animating it.

The journey through the house constantly leads you through a door toward a window, or catches you on axis between two views. "Each view is a vignette of the surrounding context," says the Moussafir. "And I wanted the house to breathe." The very small kitchen, open on three sides, allows you to survey the entire building from a pivotal position between the main cubic volume and the thin extension of the studio wing. Where the rear of the house abuts a neighboring structure, Moussafir inserted a long light well, enhancing the luminosity of the studio. One of the house's most interesting features is the striking contrast between apparent exterior solidity and interior openness, achieved through light and skillfully incised openings.

THE JOURNEY THROUGH THE HOUSE CONSTANTLY CATCHES YOU ON AXIS BETWEEN TWO VIEWS.

The qualities of light and color constantly change throughout the building. The mark of the resident artist, who influenced the palette, shows up in some of the wall hues, such as dark blue in the ground floor hall or lavender blue in the kitchen upstairs.

The Stein/Fleischmann House is a surprisingly seductive place. The simpler its clean-lined volumes appear, the more interesting and nuanced it becomes, ultimately seeming much bigger than it really is. Yet it is so comfortably compact. When the owners' young children eventually need more room, the family will, they imagine, build another house, rather than disturb Maison Stein/Fleischmann's finely integrated spaces. One thing is sure: They won't be changing architects. ■

Sources

Exterior stucco: *La Seignerie*

Polycarbonate cladding: *Everlite Danpalon*

Glazing: *St. Gobain (double laminated and sandblasted)*

Wood: *Iroko*

Perforated plasterboard: *Knauf*

Lighting: *Erco (wall washers)*

Concrete surfacing: *Durcisseurs Francais (with integral color)*

WWW For more information on the people and products involved in this project, go to Projects at **architecturalrecord.com**.

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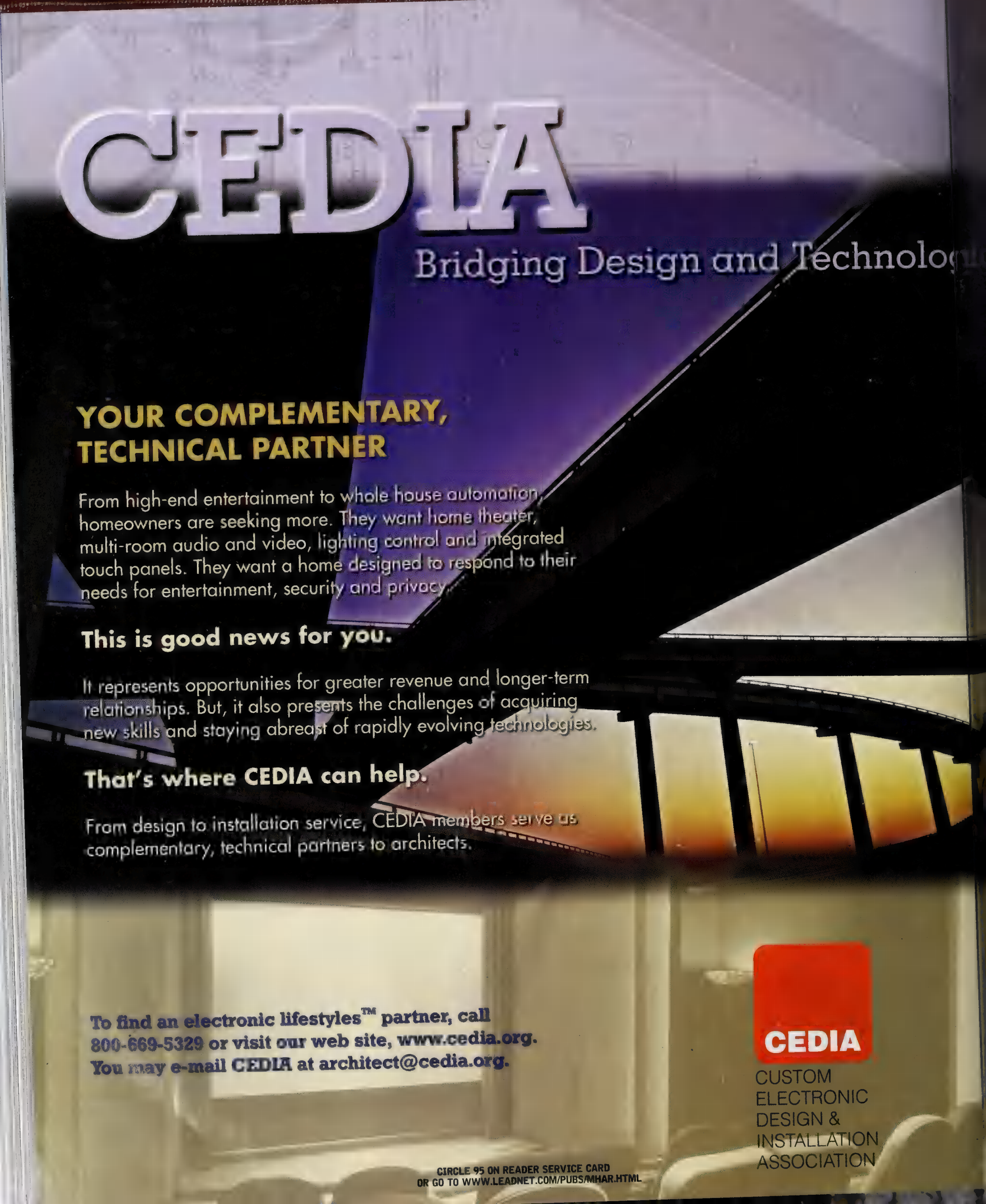

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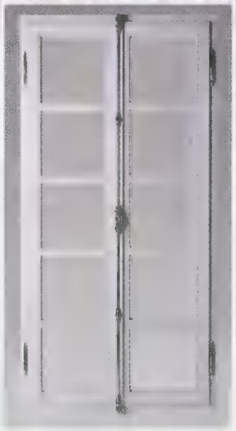

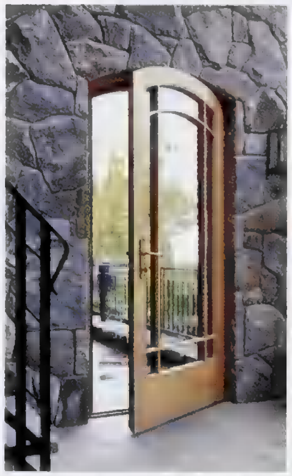

Roderick Graham/Richard Jaffe, architects, Holly Stickley Photography

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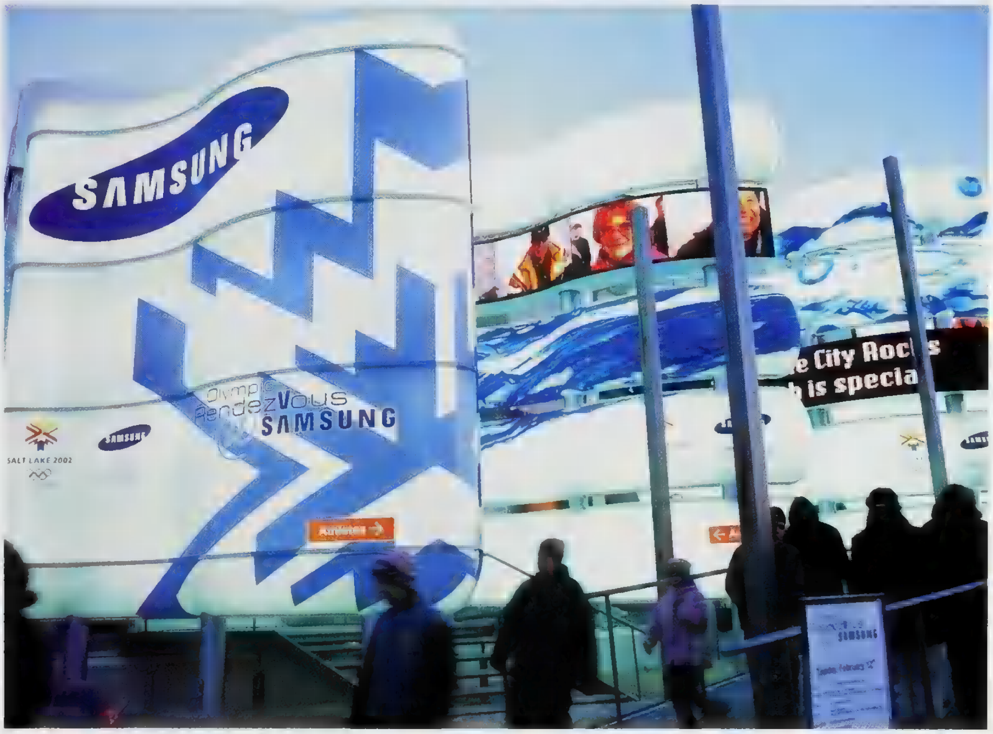
Architects discover the flexibility of lightweight and durable fabrics

ADVANCES IN FILMS AND COATINGS MAKE FABRIC AN EXCELLENT ALTERNATIVE TO GLASS

By Todd Willmert



The Samsung visitors center at the Winter Olympics in Salt Lake City, designed by Imagination, was made of a polyvinyl chloride skin stretched across a space frame.

Fabric lacks the permanence of masonry or metals, yet certainly the material has as long a history in architecture. The Roman word *velarium*—which is still used today—meaning a large awning, especially one suspended over a theater or amphitheater, hints at fabric's importance in providing shade within these building types. Today, the generic term "fabric" refers to a wide assortment of materials: fiberglass; polyvinyl chloride (PVC); ethyltetrafluoroethylene (ETFE) foils; and polyester—and their many coatings, such as polytetrafluoroethylene (PTFE), or Teflon—that represent an evolution similar to the one glass has enjoyed due to recent advancements in films and coatings. Christian de Portzamparc's Louis Vuitton Moët Hennessy (LVMH) tower in Manhattan, for example, uses 24 different kinds of glass, each one with a different U-value and shading coefficient.

Now new fabric materials are gaining acceptance as both an alternative to glass and to other building materials. Traditionally, fabric's primary architectural use has been for awnings to block the sun, but current work is challenging this concept. Increasingly, architects are exploiting its light-transmission characteristics—either allowing daylight in or keeping electric light out—within temporary or portable projects and permanent buildings, as well.

Todd Willmert is an architect and researcher at the University of Minnesota's Center for Sustainable Building Research at the College of Architecture and Landscape Architecture.

CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ *AIA Continuing Education article. To receive credit, turn to page 190 and follow the instructions.*

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. *Describe how fabrics can be used to transmit light.*
2. *Explain the current popularity of fabrics in architecture.*
3. *Discuss recent projects using fabrics to control light transmission.*

WWW For this story and more continuing education, as well as links to sources, white papers, and products, go to ***architecturalrecord.com***.

Temporary applications

Projects by Tokyo-based Klein Dytham Architecture over the past several years have explored the vocabulary of light within lightweight structures. Its "Pika Pika Pretzel" project, built in 2000 [RECORD, November 2000, page 73], was a temporary, promotional structure for a prominent site in one of Tokyo's busiest shopping districts. The international developer, Veloqx City Investment, wanted to capitalize on the site's 111-foot street frontage to create something eye-catching and unusual, to boost their entry into the Japan market and pique interest in the retail center for nine months prior to construction.

Pika Pika (Japanese for "shiny") consists of the four 6-meter high "pretzels" made of polyurethane-coated nylon, the same material as high-altitude balloons. The reflective pretzel body—achieved with metalized polyester laminated to the nylon—contrasts with the translucent white material of the pretzel holes, which glow after dark when the inflatables are internally lit. Similarly, the set of five portable canopies that Klein Dytham designed for Festival UK 98, a yearlong celebration in Japan organized by the British Embassy and Council to feature information on British products, services, and culture, become beacons when lit from within by their by 20 sodium halide lights. The inflatable "pillows,"

Festival UK 98

Five portable canopies by Tokyo-based Klein Dytham Architecture were made of polyurethane-coated nylon and lit from within by 20 sodium halide lights.

Pika Pika Pretzel

Klein Dytham designed this temporary, promotional structure (right and far right) for a busy Tokyo shopping district. Made of polyurethane-coated nylon, it is inflated and lit from within so that it glows at night.

also fabricated from polyurethane-coated nylon, and their aluminum framing were designed to be dismantled and reassembled at as many as 30 locations throughout the year.

More recently, the Olympic Rendezvous @ Samsung (OR@S) stood for two weeks in February at the Winter Olympics in Salt Lake City. Designed by Imagination, a London-based multidisciplinary design firm, to create an interactive visitors center to showcase the electronics manufacturer's products, the two-story, 12,500-square-foot pavilion was essentially a white, space-frame/truss structure with a PVC skin stretched over it. The roof and three sides of this structure were opaque (blackout PVC) so that the exhibition designers controlled the theatrical and exhibit lighting effects. The front side was made of a clear PVC (actual light transmittance of about 80 percent), which allowed light to shine in during the day and out at night. This clear face also enabled the pavilion's internally illuminated front billboardlike facade to be viewed from the pavilion interior.

ARCHITECTS ARE EXPLOITING [FABRIC'S] LIGHT TRANSMISSION—ALLOWING DAYLIGHT IN OR KEEPING ELECTRIC LIGHT OUT.

The front facade was actually a separate structure that sat in front of the pavilion's clear PVC entrance. This structure was composed of internally illuminated, molded fiberglass wave forms, on which there were both scenically painted and applied vinyl graphics and integrated LED video wall components. Visitors passed through these wave forms to enter the pavilion, and, when inside, they could project their own images on the outside screens through picture phones using a Web-based picture kiosk. These images of visitors were displayed along with scrolling text messages and live videos from competition action.

As with most of these materials, PVC's ability to transmit light is quantified through testing. Some architects, however, prefer a more intuitive, hands-on approach. Alan Parkinson, who designs Architects of Air's luminaria (sculptural, pneumatic, immersive environments), does not specify light-transmission percentages; rather, he spends time at the factory lab participating in the process of producing and testing materials.

"The chemistry of PVC, the material we use, appears to be quite prescriptive, in that it is hard to actually get good, clean, luminous

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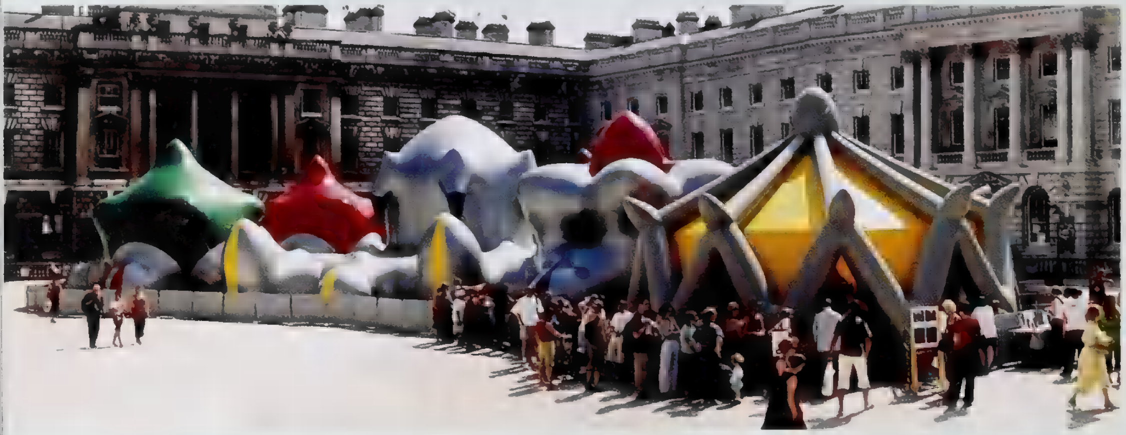
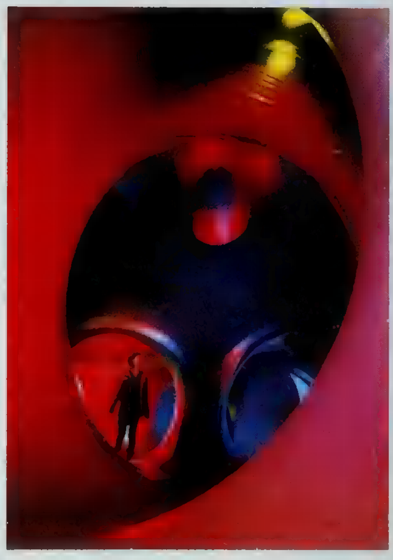
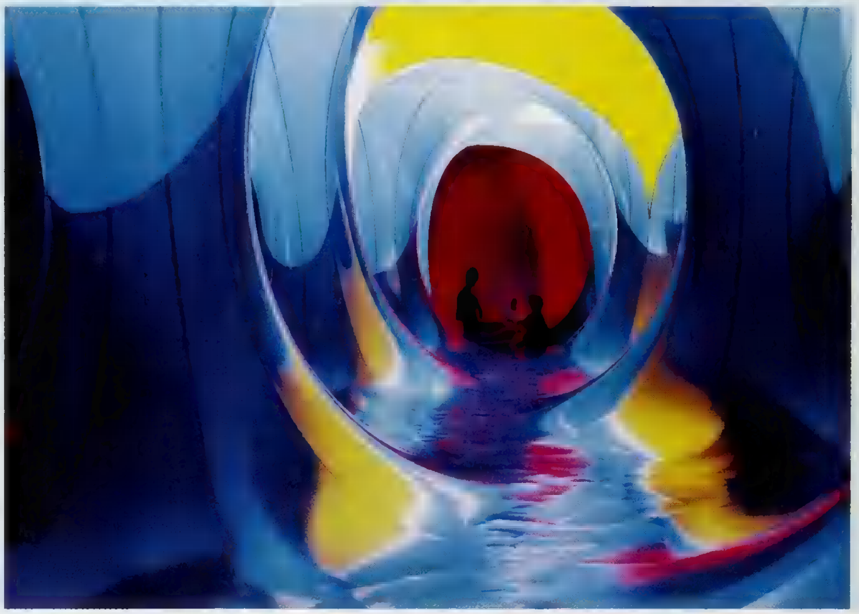




Luminaria

Inflatable, sculptural environments by Architects of Air are made of both reinforced and unreinforced polyvinyl chloride (PVC). The material is cut and glued by hand in a former lace factory in Nottingham, England. Portable sections are zipped together on-site, and the structures are inflated by large fans. They can reach more than 30 feet in height and cover 10,000 square feet.



colors that are neither too opaque nor translucent," he explains. Just as light traveling through stained glass picks up the glass color, light is "stained" when it passes through the PVC. Since the luminaria's luminous effect hinges on the PVC's color and light transmission, Parkinson's attention to material fabrication is essential. In specifying, Parkinson also is most mindful of the PVC's flexibility and reaction to cold temperatures, all-important factors impacting a structure's portability. As the luminaria travel from site to site, much as circus tents do, such considerations affect the long-term durability of the PVC and the structure itself.

"PVC IS ALSO WATER IMPERVIOUS AND HAS A LOW EXPANSION/CONTRACTION RATE FROM TEMPERATURE CHANGES."

Parkinson works with the Belgian firm Solvay developing PVC to his specification and uses off-the-shelf PVC from the French manufacturer Ferrari for the structure's high-pressure elements—the exoskeleton-ribbed structures that support entry areas, the airlock, and the entrance canopy. Parkinson works with Solvay's specially commissioned, unreinforced PVC for the main chambers of his luminaria structures. In contrast, the Ferrari PVC is reinforced with woven nylon, giving it relative dimensional stability critical to airlock function. The luminaria's entry components are conventionally supported and reinforced, and the structures themselves are continually inflated with six to eight small fans, depending on luminaria size, to balance the air lost as people go in and out. The slight movement and swaying in the unreinforced PVC spaces, and their curvilinear surfaces and lighting effects, all contribute to the luminaria's unique environment.

A space frame obviously creates a different type of environment, although it too has a PVC skin. In the Samsung pavilion, Mike Sloan, an architect and head of 3D design at Imagination, addressed factors informing material selection. "PVC material is stronger structurally than other materials in the same price range, allowing us to achieve greater spans between structural members," says Sloan. "PVC is also water impervious and has a low expansion/contraction rate due to temperature changes. Both qualities were critical in Salt Lake City, where the weather can change radically from day to day. The PVC

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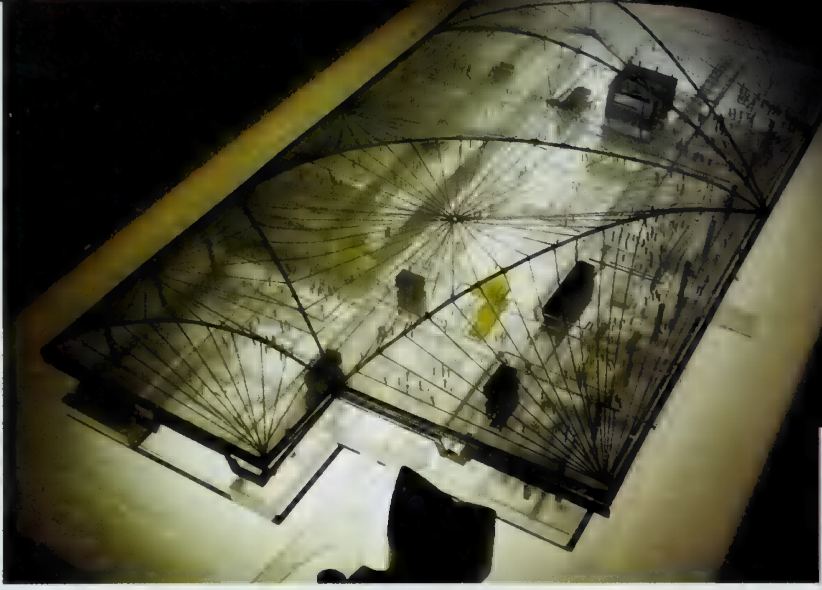


Los Angeles County Museum of Art
In early conceptual phase, Rem Koolhaas and his Rotterdam-based firm Office for Metropolitan Architecture (OMA) show a translucent fabric roof covering the entire museum.

material also came in the bright white color we were looking for, while still staying within our budget."

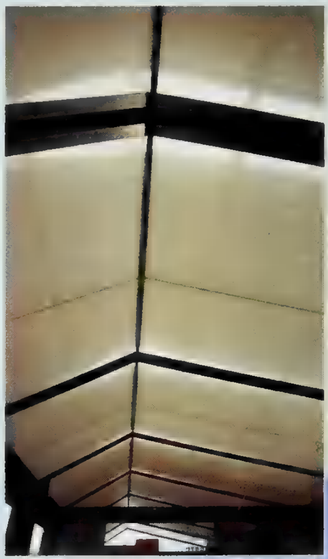
Permanent applications

Some of the most striking fabric applications are structures for exhibitions or other temporary uses. Fabric is perfect for these situations, and fabric structures have as well long been used in bubble domes and other similar facilities. But the material use is not limited to these temporary or semipermanent structures, with some current applications on building types with more exacting environmental standards. The advantages and quality of a luminous fabric roof are not sacrificed to other important considerations.

Marwan Al-Sayed's recent House of Earth and Light in Phoenix [RECORD, March 2001, page 47] and Rem Koolhaas's Office for Metropolitan Architecture's (OMA) proposal for the new Los Angeles County Museum of Art (LACMA) both utilize luminous fabric roofs that filter daylight. In fact, the light filtration is central to each project's parti.

THE MATERIAL USE [OF FABRIC] IS NOT LIMITED TO TEMPORARY OR SEMIPERMANENT STRUCTURES.

The House of Earth and Light juxtaposes heavy, poured earth walls (a mix of soil and portland cement that is poured into concrete forms) with a lightweight, layered fabric roof held aloft by eleven metal trusses. The house's moniker—Earth and Light—is found in these two key building elements that comprise walls and roof. Eighteen-inch walls play against the metal frame and fabric roof in a game of contrasts between heavy and light materials, but they also address the environmental performance. The walls' high thermal mass counterbalances the lightweight roof, to help stabilize temperatures. Al-Sayed



House of Earth and Light
Marwan Al-Sayed's House of Earth and Light in Phoenix has a lightweight fabric roof supported by 11 steel trusses. The roof is constructed of two layers. The outer layer reflects sunlight and absorbs heat. The interior layer is waterproof and separated 6 to 15 inches from the exterior by an air space.

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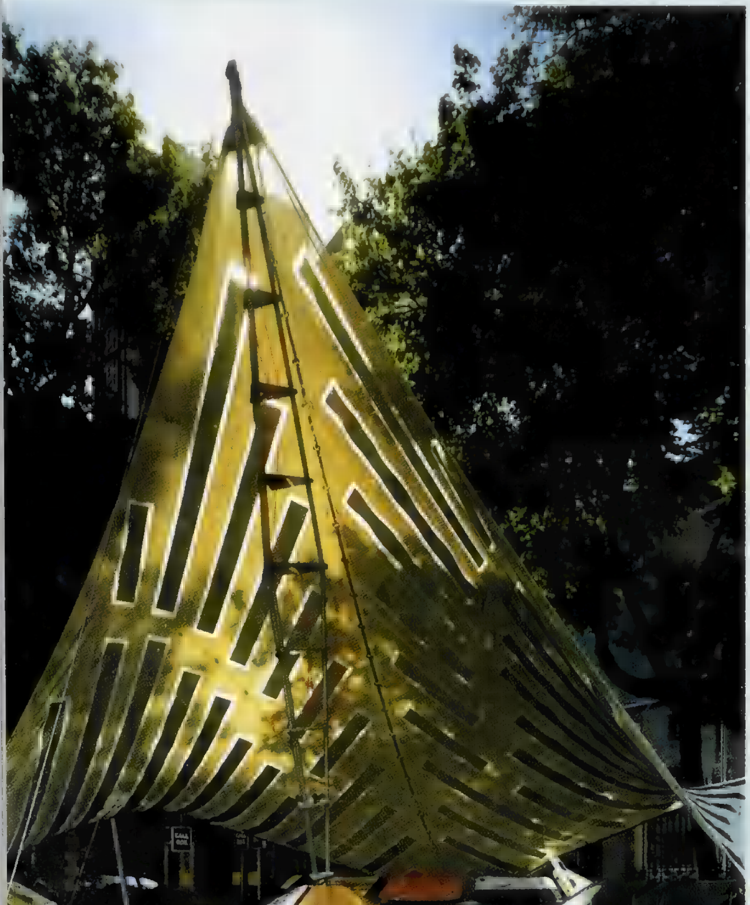
notes that he "banked on the relative high performance and technical advancement of fabrics such as the Ferrari Solstice and 702 Floutop T, which have excellent UV inhibitors, very good heat rejection, and low heat-transmission properties."

In addition, he also based the design on the "principle of layered skins." The top layer is the microperforated Solstice fabric—a so-called "sacrificial" layer insofar as it takes the brunt of the heat and direct sun and reflects it back into the sky or absorbs it. This layer thus protects and shades the second layer, the Floutop T fabric, which still allows light transmission. This second layer is the waterproof layer, separated from the top layer by about 6 to 15 inches of exterior air space, both layers attached to the top and bottom chords of 11 custom-designed steel trusses.

TRANSPARENCY AND UPLIFT ARE MANIFEST IN THE RIBBED ROOF, CROWNING AND OVERARCHING THE ENTIRE MUSEUM COLLECTION.

The original design called for an additional inner layer creating 6 inches of dead air space between the second layer and this last interior layer. However, the owner opted not to add that fabric layer, one that Al-Sayed would have used to introduce subtle colors within the house. As it is, the trusses and fabric ductwork within them, both light elements, allow the roof to "act as an ever-changing filter with the outside world," according to Al-Sayed. The layers of translucent and light-transmitting fabrics dematerialized the roof, revealing the sun's movement and the shadows of passing clouds and birds.

Similar poetic notions drove OMA's LACMA scheme, but at a vastly greater scale. The proposed redesign of LACMA literally puts the collection under one roof, the top-floor exhibition area surmounted by a translucent fabric roof resting on a metal frame. Visitors will ascend through the exhibitions from the plaza level below, their movement guided by the luminous roof. Transparency and uplift are manifest in the ribbed roof, crowning and overarching the entire permanent museum collection.



The tensile pavilion (above) at the Cooper-Hewitt exhibition had PVs laminated to the polyester fabric. The U.S. Army is investigating a field tent (right), called the TEMPER, an acronym for Tent Modular Personnel, which has PVs bonded to the fabric surface with pressure-sensitive adhesives.

Fabric and photovoltaics

A corollary to fabrics that transmit light are fabrics that capture light. Photovoltaics (PV) are being integrated with fabrics, just as they are with other building components, such as windows or shingles. Applications include fabric structures that shade while simultaneously converting sunlight into electricity.

The Cooper-Hewitt National Design Museum's 1998 exhibition *Under the Sun* featured a 32-foot-high tensile pavilion, the first fabric structure to incorporate PV technology into its design. Flexible, thin-film photovoltaics were laminated to a translucent fabric, a woven polyester cloth coated with PVC. The structure, designed by New York–based FTL Happold, demonstrates off-grid power capacity for a variety of temporary or permanent applications, including light shade pavilions for parks, parking lots, and urban open-space shelters for school and other community groups in rural and remote areas; deployable camps for travel; and military use.

FTL Happold's design for that installation led to two current projects. One is with the New York State Energy Research Development Authority (NYSERDA), to develop commercial products employing fabric and PV. The other is with Iowa Thin Film and the Department of Defense (DOD) developing photovoltaic fabric for military applications—a project particularly relevant given the U.S. military's need to maintain far-flung troops, often in off-grid locations.

The idea behind military PV fabric applications stems from the DOD's need to establish camps for hundreds or thousands of soldiers and support personnel, requiring fuel and generators for extended duration. Power with photovoltaic field tents—such as the photovoltaic tent fly currently under investigation—can reduce the logistical burden associated with managing fuel supplies and depots. FTL is developing mock-ups to explore such issues as folding, wiring, handling, and manufacturing.

The leap from PV tents to more architectural applications is not great, as suggested by NYSERDA's interest in the technologies, especially with the increasing interest in building integrated photovoltaics [RECORD, January 2001]. Today, fabric is used architecturally to give shade or as an architectural skin; it will perform those tasks tomorrow, too, with the potential to generate electricity, as well. *T.W.*

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OMA partner Dan Wood notes that the design is still in the proposal stage, but preliminary numbers suggest that the "fabric roof offers cost savings over a more conventional concrete shell or other roof material, primarily due to its lightness, with the advantage of more effectively bringing in light throughout the total exhibition area," says Wood.

A museum's UV filtration and light-control requirements pose just two problems that must be solved. Films and coatings can effectively address the former, with light controlled by fabric layers. Wood offers this analogy: "Just as one can take two pieces of perforated metal and arrange and overlap them to admit varying degrees of light, we propose the same with fabric layers, offsetting them to vary daylight levels." Not only does OMA propose that the roof will address the museum's light demands, they plan to capitalize on the roof vault in other ways. Retaining the current structure as a service and mechanical plinth, OMA and Arup plan to deliver conditioned air low at the levels of the art and the people, with a layer of stratified, less-conditioned air near the ceiling as insulation.

IFAI ESTIMATES THAT THE DEMAND FOR MANUFACTURED FIBERS WILL EXPAND 5.4 PERCENT EACH YEAR.

OMA has long pursued novel fabric applications. The well-publicized Bordeaux House features a chimney fabricated from fire-resistant fabric, and the Educatorium features fabric ductwork. OMA proposes that the LACMA roof will push fabric use in additional ways. The actual roof might consist of an outer skin of a translucent PVC polyester fabric, while the inner membrane layer is made of a transparent ETFE membrane supported by a cable network. But as the project proceeds over the course of the next decade, and the design moves from a competition proposal to construction documents, OMA counts on capitalizing on the evolution of fabric technology.

Whether the applications are temporary or permanent, architects and designers—with the active support of the Industrial Fabrics Association International (IFAI), a nonprofit trade association with 2,000 members—are literally pushing the envelope with all the new and improved fabric materials, and challenging the preeminence of glass as the transmitter of light. IFAI estimates that the demand for manufactured fibers will expand 5.4 percent each year, reaching 44 million metric tons by 2005. Its Sourcebook series, *Fabric Architecture*, and the annual *Designers Guide* are resources developed especially for architects. Thompson, Ventulett, & Stainbeck's Georgia Dome (1992), Richard Rogers's Millennium Dome (1999), Fentress Bradburn's Denver International Airport (1995), and, most recently, Nicholas Grimshaw's Eden Project [RECORD, January 2002] are dramatic examples of the advantages fabric presents over glass. It appears that fabric's time has come. ■

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- **Read the article "Architects Discover the Flexibility of Lightweight and Durable Fabrics," using the learning objectives provided.**
- **Complete the questions below, then fill in your answers [page 190].**
- **Fill out and submit the AIA/CES education reporting form [page 190] or download the form at www.architecturalrecord.com to receive one AIA learning unit.**

QUESTIONS

1. Which word is the original Roman word meaning "large awning"?
a. atrium
b. velarium
c. forum
d. solarium

2. Traditionally, fabric's use in architecture was to block the sun; now it is used for which purpose?
a. absorb heat
b. reflect light
c. transmit light
d. block heat and light

3. PVC can be made somewhat dimensionally stable by reinforcing it with which?
a. woven nylon
b. aluminum
c. fiberglass
d. air pockets

4. Samsung used PVC for its pavilion because of which quality?
a. PVC is impervious to water
b. PVC has a low contraction/expansion rate
c. PVC is stronger than similarly priced materials
d. all of the above

5. Fabrics are appropriate for architectural use in which?
a. temporary structures or exhibits
b. semipermanent and temporary structures
c. mild weather applications and temporary structures
d. all-weather permanent and temporary structures

6. When designing with layered skins, the top layer does which?
a. keeps water out
b. keeps heat out
c. allows heat in
d. keeps light out

7. What is meant by the term "dematerialize" the roof?
a. the roof is not opaque
b. the roof is nonexistent
c. the roof cannot be seen
d. the roof is not important

8. Fabrics are challenging the preeminence of glass for what purpose?
a. filtering light
b. transmitting light
c. capturing light
d. dispersing light

9. The generic term "fabric" refers to which?
a. PVC only
b. polyester and its coatings
c. fiberglass and PVC
d. a variety of materials including PVC, fiberglass, ETFE foils, and polyester

10. The light transmittance of PVC ranges from opaque to what percent transmission?
a. 100%
b. 90%
c. 80%
d. 75%

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Digital Architect

The convergence of CAD standards

By Jerry Laiserin, FAIA

Cynical observers have long said that architects must love CAD standards, because we have so many of them. In an ideal world, a CAD standard would be just what the name implies: a single set of rules and procedures for documenting and conveying building design information regardless of the software used to create it or the medium in which it is viewed. But in the real world, there are multiple, overlapping standards, each of which addresses a different set of issues regarding the organization and appearance of CAD files and the sharing of information with non-CAD applications. Steady progress has been made on these fronts over the past few years [RECORD, May 1999, pages 57–58; October 2000, pages 185–86], but the goal of a unified standard has remained out of reach—until now. Recent advances among standard-setting organizations offer renewed hope for more widespread adoption of existing standards, convergence of standards, and perhaps even unification of the various standards frameworks.

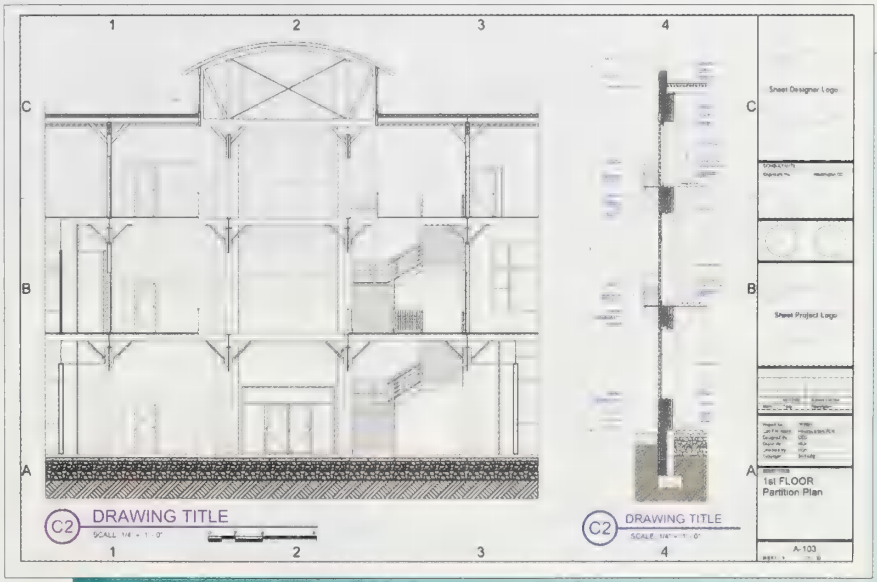
The primary players driving this integration are the National CAD Standard (NCS), produced under the auspices of the National Institute of Building Sciences (NIBS) in Washington, D.C.; and the Industry Foundation Classes (IFCs), developed by the International Alliance for Interoperability (IAI), across the Potomac River in Alexandria, Virginia. [Note: RECORD publisher McGraw-Hill is an active participant in IAI].

Drawn and quartered

The NCS is the result of a convergence among three previously independent standard-setting efforts: the AIA's CAD Layer Guidelines (CLG); the Construction Specification Institute's (CSI) Uniform Drawing System (UDS); and the Department of Defense's Tri-Services CAD Center's plotting standards. Collectively, these components define how design files are organized internally (CLG); what goes into a drawing, how drawings are aggregated onto sheets, and sheets into sets (UDS); and how the digital components are printed or plotted.

Version 3 of the standard will be available later this year and will include new terms, abbreviations, and layers from architecture-related disciplines such as civil engineering, piping, communications, and so forth, as well as a new administration section that clarifies many optional components for conformity to the standard. According to Alexander "Sandy" Shaw, who coordinates NCS activities for NIBS, these incremental improvements show the maturity of NCS "in the 2D organizational direction." He adds, "We will continue to reach out to related disciplines to expand the usefulness of the 2D information; however, we're also looking beyond 2D toward objects and the facility lifecycle information model."

The need to advance NCS beyond drawings is echoed by Michael Tardif, Assoc. AIA, director of the AIA's center for practice and technology. "Of course, there's still work to be done on drawings, especially the addition of metadata in drawings that will ensure predictability of printed output regardless of the output device or setup," he says. "But to move past drawings, NCS must develop organization and classification information for objects, which naturally pushes NCS closer to IAI and its IFCs."



Having the National CAD Standard built into CAD software, as shown here in ArchiCAD, automates drawing tasks such as title blocks and sheet titles, and ensures coordination and consistency of detail and sheet formats.

Object lessons

While 2D CAD merely automates the familiar work of hand drafting, CAD objects represent a new, more intelligent representation of buildings and building components. The real power of objects lies in their ability to present virtual buildings—just like physical objects, CAD objects have attributes and behaviors, such as the handedness and swing of a door. However, interoperability among different programs is far more problematic for complex CAD objects than it is for simple 2D lines. This is where IFCs come in—a system of definitions for classes of

Contributing editor Jerry Laiserin, FAIA, provides strategic consulting services to architects and their technology providers.

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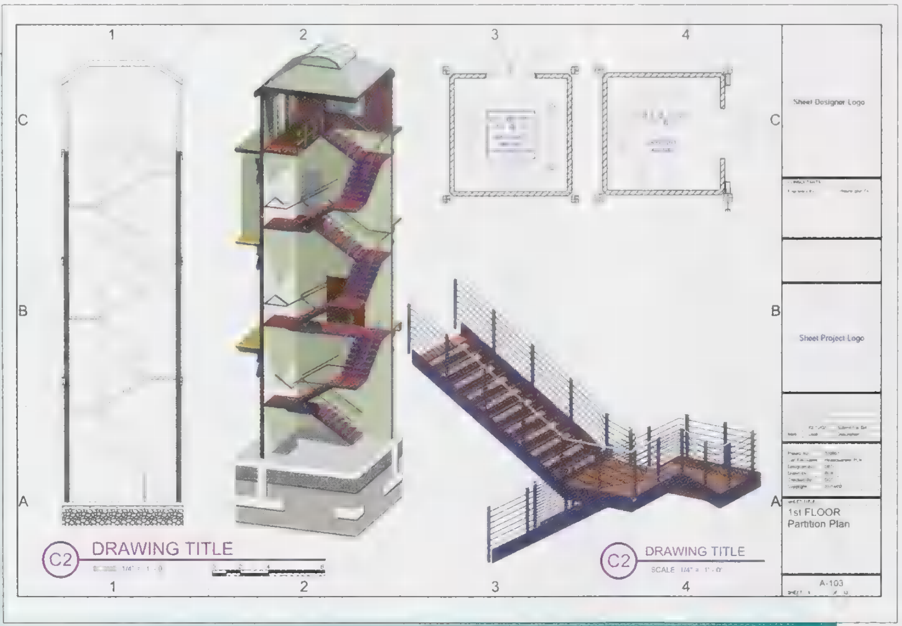
objects, such as doors, walls, and stairs. If two or more programs, such as space-planning software, a CAD tool, and a cost-estimating package, all comply with the same IFC standard, then they can use and operate on each other's model data.

Since its founding in 1995, IAI has released several versions of IFCs. While many of IAI's 600-plus member software firms chose to wait for the most recent IFC 2.x before integrating the standard into their wares, a significant number of IAI members, operating separately under the banner of Building Lifecycle Interoperable Software (BLIS), chose to get a head start by incorporating the earlier IFC 2.0 standard into their products. For example, a space-planning spreadsheet in Microsoft Excel can be converted to a simple floor plan in Microsoft Visio and then turned into a 3D object CAD model in Graphisoft's ArchiCAD—all through the interoperability features of IFC 2.0, without file conversions or reentry of data. Timberline's IFC 2.0-compliant CAD Connector can then use the data in the ArchiCAD model to quantify building assemblies for Timberline's Precision Estimating package. Dianne Davis, president of AEC Infosystems, a CAD consultancy and ArchiCAD dealer in Baltimore, sees the BLIS initiative as "taking the technical interoperability of IFCs and building the business case of company-to-company connections around them."



ArchiCAD is the first product to implement and integrate both the object-based IFC 2.0 standard and the 2D-based National CAD Standard, a trend likely to be followed by other vendors that have recently committed to IFC 2.x.

Recently, several major CAD vendors, including Graphisoft, as well as Autodesk (Architectural Desktop), Bentley Systems (Microstation Triforma for Architecture), and Nemetschek North America (VectorWorks Architect) agreed to move forward over the next three years with implementations of IFC 2.x comparable to what the BLIS project achieved with IFC 2.0. Even previously IFC-aloof Revit Technology joined in the announcement, possibly under the influence of the firm's pending acquisition by Autodesk. However, ArchiCAD is thus far the only CAD product to incorporate support for both the NCS and IFC 2.0 in the same program.

Playing tag

Because IFCs support the ability to move data via "tags," or descriptors, in the Web language XML (Extensible Markup Language), standards enthusiasts such as Tardif at the AIA foresee an opportunity to add XML tags to NCS drawing entities so they can be integrated more easily with IFCs. "The goal of converging NCS and IFCs is to get an interconnected set of 2D and object representations for the same data," he says. Facility owners and managers have a keen interest in this integration, Tardif notes, adding that entities like corporations, universities, and medical facilities "do not want to develop and maintain their own drawing and object standards, and they don't want to integrate or translate between 2D standards and object standards. They just want to receive standardized data."

INTEGRATION OF STANDARDS COULD ENABLE A SURGE IN PREDESIGN AND POST-OCCUPANCY SERVICES.

David Jordani, FAIA, agrees. His company, Jordani Consulting Group, in Minneapolis, helps large organizations such as General Motors and the University of Minnesota manage their facility information. "Owners still have to confront the dominance of legacy information—2D drawings for hundreds of millions of square feet of space," he says. "NCS provides the continuity and consistency for drawings, but companies moving to object models like IFC need to manage their migration and be committed to maintaining the extended value of the model data. Using some form of XML will smooth that process."

Shaw at NIBS is hopeful that intermediate steps such as XML will help bring the NCS and IFCs closer together, because that path leads to the utility owners need from their facility information. "After the first release of NCS, NIBS changed the committee name from CAD Council to Facility Information Council (FIC)," says Shaw. "That group still develops NCS, but it also does outreach to the IAI and to the OAA [Owners' Association Alliance, a confederation of real estate and industry groups]." A subset of the FIC, the Facility Maintenance and Operations Committee, is preparing to release an XML schema that plugs into IFCs and also allows building equipment manufacturers to publish operating manuals in electronic form that can be read directly by computerized maintenance management software used by owners.

Stirring the alphabet soup

Folks outside the Beltway are easily overwhelmed by the proliferation of TFLAs (three- and four-letter acronyms), but they provide a convenient verbal shorthand for communicating complex issues. As both the NCS and IFCs blossom, with cross-pollination by various forms and flavors of XML, it is clear that FIC and IAI will grow closer together. NIBS will spread an expanding umbrella over the activities of AIA, CSI, OAA, and other interested parties.

This near-cryptographic complexity will benefit architects by increasing the value of the design data we create and extending that value both upstream, toward predesign planning services, and downstream, toward post-occupancy management services, within the total facility lifecycle. No matter how you mix and match the acronyms, that formula spells success. ■

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WHERE WE STAND

Strong AIA 2001 Financial Results

To AIA members,

2001 marked the second consecutive year of balanced budgets and surpluses for the AIA. These outcomes result from our commitment to conservative planning and prudent management. We have also virtually completed the dissolution of AEC (a for-profit corporation in which the AIA held an interest), and are steadfast in our resolve to continue providing strong management support. Here are some details.

2001 income and asset targets exceeded

Both net income and total net assets for 2001 exceeded our plan and an audited statement will be provided to the membership at the AIA convention in May. Actual net income of $1.1 million for 2001 exceeded forecast by 5.6 percent. The net asset position for the AIA improved by almost $2.9 million, growing from a negative net asset position of -$1.5 million at the end of 2000 to positive net assets of $1.4 million at the end of 2001.

AEC dissolved

In November 2001, the directors and shareholders of Architects-Engineers-Contractors, Inc. (AEC) approved the dissolution of the AEC corporation. The appropriate documentation was filed with the state of Delaware in January 2002 and formal confirmation of the dissolution is expected shortly.

In December 2001, the claims of AEC's few remaining creditors were resolved and an agreement settling all potential differences between the AIA and the other investors in AEC was formally executed. The agreement releases the AIA and AEC from any potential liability to the other investors relating to AEC, while all affected AIA intellectual properties are fully restored to the AIA.

Going forward

The AIA Board, Finance Committee and management team remain firmly committed to working within budgets planned without deficits and maintaining the vigilance that has returned the AIA to responsible, business-like operations. Our goal is to continue to meet or exceed the financial targets set forth in the Board's three-year financial plan adopted last year. A small but important demonstration of this commitment will be continuance of these quarterly reports of financial highlights to our 70,000+ members. I welcome your comments.

Sincerely,

Norman L. Koonce, FAIA
Executive Vice President/Chief Executive Officer

AIA Financial Results 2001($000's)

	2001 Budget	2001 Actual
Revenue	$38,234	$36,445
Operating Expense	(37,164)	(35,315)
Operating Net Income	**$1,070**	**$1,130**
Non-Operating Income	2,000	3,112
Non-Operating Expense	(708)	(295)
Unrestricted Net Income	2,362	3,947
Restricted Expense	(916)	(1,097)
Total Net Income	**$1,446**	**$2,850**

AIA Balance Sheet ($000's)

	Audited 2000	Unaudited 2001
Assets		
Cash	$3,122	$1,201
Investments	10,022	8,858
Property and Equipment, net	11,179	10,531
Deferred Publication Costs	3,175	2,781
Accounts Receivable	2,136	2,074
Other Assets	1,642	2,400
Total Assets	**$31,276**	**$27,845**
Liabilities		
Line of Credit	$5,500	$514
Accounts Payable	7,590	3,986
Deferred dues and other revenue	2,554	5,733
Notes Payable	17,107	16,237
Total Liabilities	**$32,751**	**$26,470**
Net Assets		
Unrestricted	(5,724)	(1,777)
Temporarily Restricted	3,194	2,097
Permanently Restricted	1,055	1,055
Total Net Assets	**($1,475)**	**$1,375**
Total Liabilities & Net Assets	**$31,276**	**$27,845**

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High Performance Windows and Doors: Achieving Durable Finishes

How extruded aluminum cladding and the AAMA 2605-98 specification result in long lasting fenestration coatings and paints

By Barbara A. Nadel, FAIA

Windows and doors, known as fenestration, do far more than protect building occupants from the elements. They create exterior design motifs, rhythms and patterns, and punctuate interior walls, rooms and open spaces. Windows let in natural light and fresh air, the most essential environmental qualities of any occupied building.

"Architects and owners expect fenestration to perform under the most demanding conditions. To achieve this goal, familiarity with materials, standards, testing results, and ability to withstand the environment is important when specifying windows and doors," said Ric Stott, AIA, principal of Flynn/Stott Architects, P.C., in Southampton, New York.

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CONTINUING EDUCATION Series

Use the learning objectives below to focus your study as you read **High Performance Windows and Doors: Achieving Durable Finishes.** To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit, answer the questions on page 161 and follow the reporting instructions on page 192 or go to the Continuing Education section on *www.architecturalrecord.com* and follow the reporting instructions.

Learning Objectives

- *Understand the criteria and testing required for aluminum clad substrates, surfaces and paints considered for AAMA 2605-98 specification.*
- *How to maintain the integrity of finishes, and prevent fading and chalking of fenestration products.*
- *Determine if a product complies with the strict criteria of AAMA 2605-98*

High performance exterior materials meeting the most rigorous industry tests and standards provide architects and building owners with third party assurances about the quality and longevity of the products they specify. Aluminum clad exteriors with an AAMA 2605–98 paint finish, used for residential and commercial applications, feature several long term benefits, such as ease of maintenance, durability, color and finish retention.

This article will inform readers about how to recognize the role of the American Architectural Manufacturing Association; maintain the color integrity and durable finishes of building fenestration products using the AAMA 2605-98 specification; and determine if a fenestration product complies with the strict testing criteria of AAMA 2605-98.

INTRODUCTION TO AAMA 2605-98

AAMA Role In The Industry

AAMA, or the American Architectural Manufacturing Association, is a national trade association establishing voluntary standards for the window, door and skylight industry. For additional information, see AAMA's website, www.aamanet.org, which sells the specifications and other technical publications.

About AAMA 2605-98

For years, the AAMA 605.2-92 rating represented the highest grade performance for architectural aluminum extrusions and panels. However, due to advances in technology, AAMA raised these standards significantly. AAMA 2605-98, implemented in June 2001, sets the most rigorous aluminum cladding standards.

AAMA 2605-98 is a set of test criteria and specifications designed to determine a minimum level of performance finishes available on extruded aluminum clad windows, doors and panels. The purpose of 2605-98 is to assist architects, owners and contractors in specifying superior performing finishes for film integrity, weather resistance and appearance over many years.

In response to advances in aluminum coatings technology, AAMA has raised performance requirements for long-term durability of organic coatings on aluminum extrusions and panels used in high quality aluminum windows

THE VALUE OF STANDARDS

Performance requirements for any project will vary due to climate conditions such as sun exposure, salt fog, factory pollutants, hot and humid/dry environments, temperature fluctuations and freezing temperatures. Given these many possible variations, standards are important to the fenestration industry because they:

- Identify specific performance requirements based on location and project needs.
- Establish a performance baseline for new materials.
- Provide a system of quality assurance for buyers, specifiers and fabricators.
- Create a reference point for national code organizations and local code officials.
- Encourages healthy competition among manufacturers, ultimately benefiting consumers by offering higher performing products.

AAMA 2605-98 is a new 10-year specification with increased performance over AAMA 605.2-92. Significant upgrades have been made in 10-year weathering performance, abrasion resistance, salt spray and humidity. Major differences with 2605-98 over 605.2-92 are pre-treatment requirements and longevity testing. The major differences between coil coating and spray coating processes are:

- Coil coating process typically runs 700 feet per minute to apply paint.
- Spray coating process typically runs 300 feet per minute to apply paint.
- Chrome pre-treatment process is nearly non-existent in coil coating process.

The 2605-98 standard encourages use of the best coating for residential, commercial and light commercial projects, by addressing coating chemistry quality, suitable for any climate.

and doors. A new series of performance standards sets forth increasingly stringent performance requirements for "good", "better" and "best" grades of spray-applied organic coatings. On this relative scale, 2605-98 is the best and highest of the three industry standards, 2604-98 is considered better and 2603-98 is good. 2605-98 is the most difficult to comply with, but also offers the best performance of the three. Products complying with 2605-98 will outlast and require less maintenance than any other finish available.

Comparison Of 2605 To Other Standards

AAMA 2604 and 2605 specification refer to coatings of at least 30 microns (1.2 mils) thickness, intended primarily for commercial and architectural-grade applications. Both utilize the ASTM test methods and performance criteria to evaluate color uniformity, specular gloss, impact resistance, and chemical resistance. Compared to AAMA 2603, they include additional test methods, and acceptance criteria for abrasion and chemical resistance and weathering. Weathering tests evaluate color retention, chalk resistance, gloss retention and resistance to erosion after mandatory extended exposure in the generally hot and humid South Florida environment.

AAMA 2605 addresses complete coatings systems based on chrome pretreatments, often considered necessary for the best long-term adhesion of the coating to the metal, and superior quality formulations. These specifications will best serve architects, owners and builders to select and specify the appropriate level of spray-applied organic coatings for different project needs.

AAMA 2603 is intended mostly for interior, light commercial, and residential grade coatings of at least 20 microns (0.8 mil) thickness. It covers test methods and acceptance criteria for color uniformity, specular gloss, dry film hardness, film adhesion, impact and chemical resistance, corrosion resistance (under varying conditions of humidity and salt-spray exposure) and weathering. An optional one-year outdoor exposure and weathering test in a South Florida environment is used to verify the degree of crazing, checking, loss of adhesion, chalking and fading.

To best understand the qualities being tested, the following definitions are helpful:

Specular Gloss – There are two types of gloss, specular and diffuse. Gloss refers to the shine of a surface finish, with a range from highly reflective shine to a flat, dull finish. Specular gloss refers to the reflectance level of a material. A coating has a specular gloss when it is smooth and shiny enough to reflect light. Diffuse gloss refers to the absorption qualities of a material.

Crazing means that a surface is entirely cracked. Old varnish and car paint often become crazed over time, especially if exposed to sunlight. When part of a finish has crazed cracks and falls off, the finish would be considered to have "checked" or that it was exhibiting "checking."

COATING SPECIFICATIONS

What To Look For

Familiarity with AAMA standards, materials, processes and testing criteria will ensure architects specify materials and fenestration components with high quality coatings. AAMA has created many fenestration industry standards, including:

- AAMA 620-96, for coil coated aluminum substrates.
- AAMA 2605-98, for spray coated extruded aluminum substrates and panels, and mandatory chrome pre-treatment, requiring a total dry film thickness minimum of 1.2 mils. Current technology requires a minimum of 70% Kynar to comply.

Achieving The Best Coatings

A typical gallon of liquid paint consists of 10% pigment, 20% binder/ resin and 70% solvent. The formula for a superior finish requires 70% Kynar within binder and resin. Pigment is the color applied to the substrate. Binder/resin protects and holds pigment to the substrate. Solvent is a carrying agent no longer present on the finished product.

Kynar and Hylar are two products from different companies, both made from a mined mineral, called Fluorospar, similar to quartz. They are not finished paints, but are trade names for the PVDF resin (the raw material used by the licensed formulators to manufacture PVDF based coatings).

Fluorospar, also known as fluorite, is a transparent or translucent mineral of different colors consisting of calcium fluoride, and is used as a flux, or substance to promote fusion of metals or minerals. Once abundant and mined in Hardin and Pope Counties, Illinois, Fluorospar was formed over 200 million years ago, as molten magma pushed up from the earth's interior. Most surface deposits in Illinois have been mined through the years, but discovery of large, deep ore deposits developed the nation's largest fluorspar reserve area. Mining and milling of fluorspar is a major industry of the Illinois-Kentucky Ozarks.

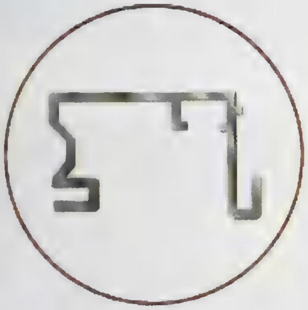
After it is mined, Fluorospar is melted, ground into a powder, mixed and processed with other chemicals to become Kynar or Hylar. Materials supplied from either company are identical.

Adhesion, resistance to wear and a hard surface all work together. Combining Kynar or Hylar superior performance resins with the right pigmentation system is essential for paint finish performance and long life resistance against color fading and chalking, thus creating an impervious system.

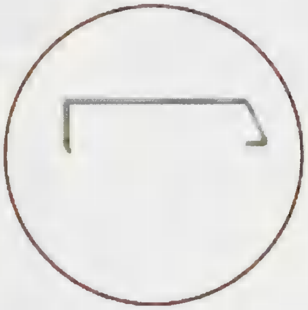
Kynar is a polyvinylidene fluoride (PVDF) resin used in the makeup of fluoropolymer resin based coatings. Fluoropolymer resin based coatings take advantage of the inherent strength of the carbon-fluorine bond, one of the strongest known to science.

A durable finish is valuable to building owners because it translates to lower routine maintenance and longer life to fenestration components. Durable finishes can withstand intense sunlight, extreme temperatures and pollutants; rarely need touch-up paints, which don't weather as well as original factory applied finish, and result in less fading and chalking of the original color. Clean air legislation is aimed at reducing Volatile Organic Compounds (VOC's), suspected of damaging the earth's protective ozone layer. Many types of touch-up paints available contain VOC's.

Aluminum Shapes And Surfaces



Extruded aluminum



Roll-formed aluminum

The AAMA 2605 process applies to aluminum extrusions and panels, preformed before paint application. Two common shapes for frames are extruded aluminum and roll-formed aluminum. Extruded aluminum is more resistant to wear, and a more stable adhering surface for paint, allowing a thicker, more consistent coating.

First, the aluminum substrate must be cleaned and prepared so the finished product will adhere well. The process calls for removing oxides, chemical conversion (chromium pre-treat), rinsing stabilizers, sealing the material and applying the top coat. The chromium pre-treatment process is a critical step that prepares aluminum surfaces to accept a superior finish and acts as a corrosion inhibitor to the aluminum. This step is mandatory for 2605-98 compliance.

When the process is complete, AAMA and ASTM tests are performed to demonstrate and measure the rate and severity of each aspect: weathering, dry film hardness, corrosion resistance, chemical resistance, film adhesion, abrasion resistance, specular gloss, and impact resistance.

Why Coatings Fail

Coatings often fail because environmental conditions damage the coating surface covering the material substrate. Environmental conditions that break down exposed surfaces include:

- Rain (acid rain, dust, hail, high humidity)
- Human pollutants (smog, factories)
- Sun exposure (ultra-violet rays, heat)
- Temperature extremes

Testing Methods And Criteria

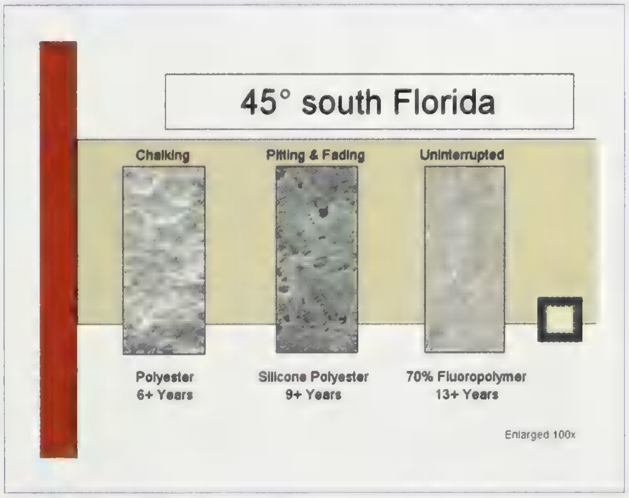
Several rigorous performance tests determine whether a coating meets or exceeds the AAMA 2605-98 specification. The weathering test is one of the ASTM test methods and performance criteria applied to the AAMA 2605 standard. Paint manufacturers have had product on a Florida test fence for over 30 years. Samples are placed on the fence at a 45° angle facing the strong tropical sun and environmental exposure. Some of the panel is protected to provide a baseline comparison. One year on the test fence equals approximately 2 1/2 years of more temperate exposure.

Test results fall into four measurable categories, each with its own rating system:

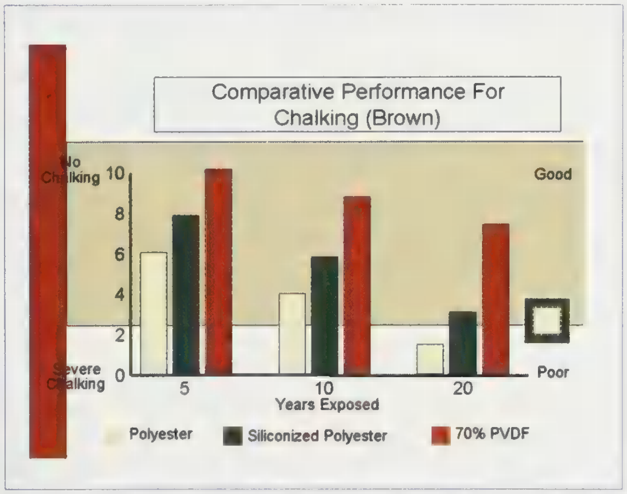
- Chalking: greater than or equal to a number 8 rating, on a scale from 0 (severe chalking) to 10 (no chalking).
- Fading: less than or equal to 5 delta E units, considered a barely discernable change to the human eye, on a scale from 0 (no fade) to 15 (severe fade).
- Gloss: within +/- 5 units of the manufacturers specification.
- Erosion: less than or equal to 10% film loss.

Chalking and fading are directly related to cause and effect of coating failure. Chalking relates to resin, while fading pertains to pigments. A failure of the resin results in chalking, evident when paint comes off when a finger or cloth is swiped and picks up a white powder, illustrating the paint system breaking down. Pigment failure results in fading, or color leaching out of the product. Resin is the paint filler.

Resistance to chalk and fade is measured on the scale of "good, better, best", as applied to available finishes. Polyester provides a good level, Silicone Polyester is better, and PVDF (Kynar or Hylar) is rated the best.



Test results from the South Florida specimen illustrate coatings impact. Polyester, after six or more years, results in chalking surfaces, representing the "good" rating. Silicone Polyester, after nine years on the exposed specimen, exhibited pitting and fading, or the "better" rating. The 70% Fluoropolymer, after 13 years, yielded the best result, with an uninterrupted surface.

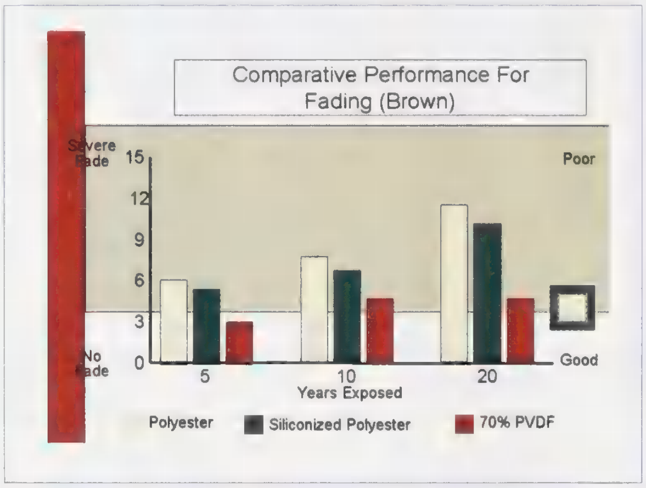


Chalking occurs when a finish surface degrades and breaks down, causing resins to be released, leading to greater paint failure. Chalking is caused by a degradation of the resin systems on the finish, predominantly due to ultraviolet (UV) rays. As the resin system breaks down, resin particles lose adhesion and assume a white appearance, taking the pigment with it. Loss of resins is known as chalking. On unprotected cladding, chalking is easily rubbed off, and results in a dull appearance.

Paint finishes can resist chalking and degradation with Fluorospar®, a 70% Kynar finish featuring a very strong chemical bond, giving products superior performance. Comparative specimen test samples treated with acrylic, Silicone Polyester and 70% Kynar, and left unexposed, exposed for 51 months and 160 months, respectively, indicate a dramatically smooth, undamaged appearance for samples treated with 70% Kynar.

Comparative performance levels for chalking may be measured for each coating material over a five, ten and 20-year exposure, ranging from severe chalking (poor) to no chalking (good). Using the AAMA 2605 test criteria on a 1-10 basis, with eight as the minimum acceptable standard, only 70% PVDF coating meets and exceeds an 8 rating towards no chalking, resulting in a superior performance over Polyester and Siliconized Polyester.

Color fading occurs when environmental elements, such as ultraviolet light, temperature extremes, moisture, acid rain, chemicals used to wash, clean or finish other parts of buildings and various chemical pollutants, attack the paint pigment system and cause color to change or lose intensity.



Comparison of different paint performance systems is available for fading, and for each of the three coating materials in five, ten and 20 year increments of exposure to the environment. Higher numbers result in more pigment remaining to protect the substrate and hold color. The scale ranges from no fade (good) to severe fade (poor). Using AAMA 2605 test criteria of less than or equal to 5 delta E units, on a scale from 0-15, only the 70% PVDF coating meets or exceeds the rating of less than five units, resulting in a superior performance over Polyester and Siliconized Polyester. This works opposite from the chalking ratings; for fading, lower numbers represent closer match to the original pigment.

Dry film hardness is the first defense against damage, such as during manufacturing, delivery, installation or from environmental factors.

The dry film hardness test is another method applied to the AAMA 2605 performance criteria, using a Berol Eagle Turquoise pencil, with a grade F minimum hardness. The hardness rating scale for lead pencils ranges from 6H, 2H to H as the hardest, and HB, B, to 6B as the softest. F leads represent the middle of the hardness scale between 6H and 6B. The lead is positioned at a 45° angle to the specimen, and pushed forward while applying pressure. Optimal performance results in no rupture of film.

Dry film hardness test

Corrosion damages materials not treated with the proper coatings. Moisture and salt are very corrosive elements when left on an exposed surface. The corrosion resistance test consists of two conditions. First, to test against humidity, a specimen is put in a controlled heat and humidity cabinet for 4,000 hours (about 167 continuous days) at 100°F and 100% humidity. The specimen is examined to determine if the maximum number of blisters, in size and/or diameter, has been exceeded, indicating failure. Results allow a few blisters, no greater than Size 8. The test is a visual comparison, using existing photography from the ASTM.

Corrosion resistance test

Second, to test against salt spray, such as might be found from salt water and coastal conditions, the material is scored to expose metal, and the specimen is exposed for 4,000 hours to a 5% salt solution.

A 7 rating indicates salt has eroded under the finish, exceeding $^{1}/_{16}$", causing failure. The rating will also determine if the specimen exceeded a maximum number of blisters resulting in failure. A minimum rating of 7 ($^{1}/_{16}$") represents a dimension of creepage under the finish and would fail to meet AAMA 2605-98 standards. Results call for a minimum rating of 7 on cut edges and minimum blister rating of 8.

Chemical resistance is measured with several tests on materials and chemicals used when washing, cleaning or finishing a building. All test paint system resistance under the following conditions and with the desired results:

- *Muriatic acid*: uses a 10% solution and 15 minutes of exposure.
  Results: no blistering or visual change.
- *Mortar*: includes a 24-hour pat test in 100% relative humidity.
  Results: mortar should dislodge easily, no loss of film adhesion or change in visual appearance.
- *Nitric acid*: a 30 minute test with exposure to 70% nitric acid solution. The solution is bottled, test sample placed color side down on the bottle opening.
  Results: no more than 5 delta E color change.
- *Detergent*: material is covered with a 3% solution immersed in 100°F for 72 hours.
  Apply tape, sharply remove tape at right angle.
  Results: no loss of adhesion, no blistering, no significant change in appearance.
- *Window cleaner*: Apply 10 drops of window cleaner, let sit for 24 hours.
  Record a visual appearance, after another 4 hours, conduct dry film adhesion test.
  Results: no blistering or change in visual appearance, no removal of film under tape. ■

Click for Additional Required Reading

As part of this CES Learning Activity, you are required to read content on this subject online. To access the article and additional content online, visit *www.architecturalrecord.com/CONTEDUC/ConteducC.asp* or call 212.904.4558 to obtain a faxed copy of the additional text. Test questions related to the online material are included below.

Learning Objectives

- *Understand the criteria and testing required for aluminum clad substrates, surfaces and paints considered for AAMA 2605-98 specification.*
- *How to maintain the integrity of finishes, and prevent fading and chalking of fenestration products.*
- *Determine if a product complies with the strict criteria of AAMA 2605-98.*

Instructions

Refer to the learning objectives above. Complete the multiple choice questions below. Then go to the continuing education reporting form on page 192. Include the answers to these questions on the reporting form. Follow the instructions on the reporting form carefully. Fill out the form and mail or fax it to the address provided to receive one AIA/CES Learning Unit including one hour of health safety welfare credit. You may also go to the continuing section on *www.architecturalrecord.com* to read the course, answer the questions, print out the reporting form at the end of the course, fill it out and mail/fax the form to the address provided on the reporting form.

Questions

Q: 1. AAMA is a national trade association representing professionals of which industry:
A: a. windows, doors, and skylights
b. wood windows and doors
c. door and window hardware
d. aluminum extruders

Q: 2. The color finish on extruded aluminum materials and roll-formed materials will fade at the same rate
A: a. true
b. false

Q: 3. Which is the critical step that prepares aluminum surfaces to accept a superior finish and acts as a corrosion inhibitor to the aluminum?
A: a, removing oxides
b. chromium pre-treat
c. rinsing stabilizers
d. applying top coat

Q: 4. Which of the following is the coating specification for AAMA 2605-98, 2604-98, 2603-98?
A: a. plastic profiles coating
b. coil coating
c. spray coating

Q: 5. To achieve the best fade resistant coating on aluminum clad products, you should require which finish specification?
A: a. AAMA 613
b. AAMA 620
c. AAMA 2605

Q: 6. Chalking means the surface of a finish:
A: a. is entirely cracked
b. has chemically broken down and degraded
c. is pitted or pock marked

Q: 7. Kynar and Hylar are trade names for PVDF (polyvinylidene fluoride) resin?
A: a. true
b. false

Q: 8. The corrosion resistance test is used to test against__________ and__________:
A: a. nitric acid and muriatic acid
b. humidity and salt spray
c. detergents and cleaners
d. chalking and color fading

Q: 9. What is the minimum coating thickness to be able to comply with AAMA 2605-98?
A: a. .8 mils
b. .9 mils
c. 1.2 mils

Q: 10. Extruded aluminum is more resistant to wear, and a more stable adhering surface for paint, allowing a thicker, more consistent coating.
A: a. true
b. false

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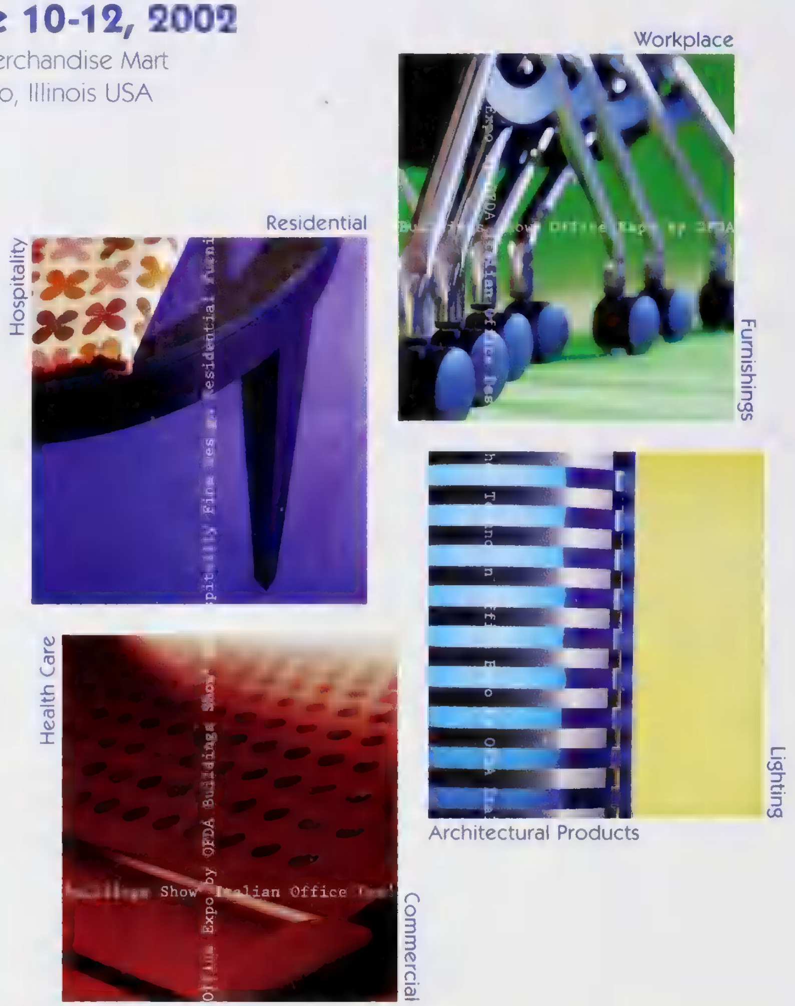

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Simonton Windows® presents:

Vinyl Windows Come of Age

Admit it. If you're an architect born before 1970, it's unlikely you ever imagined yourself specifying vinyl decking, urethane trims or even plastic shutters into your projects. Vinyl windows fall in the same category. But engineered plastic products have come a long way in the past several decades and are now readily accepted—even embraced—by industry professionals and clients.

What has driven this trend of growth for vinyl products and brought the building industry to this point? A greater understanding that engineered plastic products offer outstanding low maintenance and energy efficiency features. For the window industry in particular, strong attention to construction details coupled with advances in quality window systems mean superior products for residential and commercial projects.

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Use the learning objectives below to focus your study as you read **Vinyl Windows Come of Age**. To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit, answer the questions on page 171 and follow the reporting instructions on page 192 or go to the Continuing Education section on *www.architecturalrecord.com* and follow the reporting instructions.

Learning Objectives

- *Explain the features, benefits and attributes of vinyl windows.*
- *Describe design options that set vinyl windows apart.*
- *Convey information on quality production of vinyl windows.*

Growth of Vinyl

According to recent industry figures from Ducker Research Company, vinyl has been steadily taking market share away from aluminum and wood windows. The research firm reported that, in 1999, vinyl window sales surpassed sales of wood windows for the first time ever. This is especially true in pocket areas of the southern U.S., in Texas and in California.

The Vinyl Institute (VI) reports that the qualities that make vinyl a strong contender in the building products arena are its durability, abrasion and moisture resistance and excellent fire performance properties. The fact that vinyl withstands rust and corrosion and does not conduct electricity, makes it even more appealing.

Concerned about the environment? Then think vinyl. VI reports that in a study of transportation and construction applications, vinyl was one of three plastic materials with the lowest energy requirements, saving more than 34 million BTUs per 1,000 pounds made. In the construction market, vinyl saves about 44.2 million barrels of oil per year. And that's not all. VI reports that about 18 million pounds of post-consumer vinyl were recycled in the U.S. in 1997.

Along with eliminating the need to use cut down trees for lumber, VI reports that the vinyl manufacturing process is resource- and energy-efficient. The entire process—from raw material to vinyl resin—recycles nearly all waste back into the system into a finished product and minimizes the potential for releases.

With the growth of vinyl, architects are increasingly specifying vinyl windows in residential and low-rise commercial products throughout the country. Most products meet codes set by the Southern Building Code Congress International (SBCCI), the Building Officials and Code Administrators International (BOCA) and the International Conference of Building Officials (ICBO). The unified standard set by the American Architectural Manufacturers Association (AAMA) tests all windows in independent third-party laboratories to assure that standards are met for structural adequacy to withstand wind loads, resistance to water leakage, air infiltration, forced entry and other non-mandatory performance requirements.

Overall, vinyl windows are now seen as a viable and positive option for all types of projects. The affordability of vinyl windows, coupled with their value and quality, has made the product a stand-out success.

Glazing Systems

Consider the features that have turned many architects toward specifying vinyl windows. To begin with, glass options are abundant. Whether you require insulated, laminated or impact resistant glass, you can get it with vinyl windows. In addition, many manufacturers also offer Low E options and upgrades of glass filled with Argon or Krypton gas to add more thermal efficiency to units.

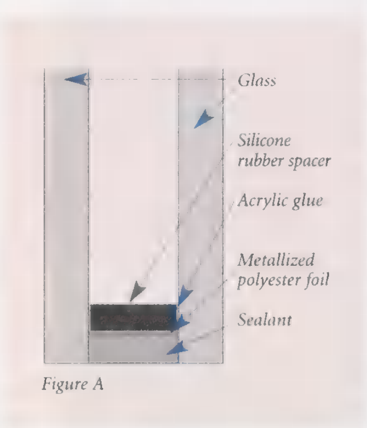


Figure A

Another option, warm-edge technology, provides a "wrap around blanket" for the edges of the glass, providing protection against conduction. As a result, the potential for condensation and air infiltration is reduced.

According to information reported in *Residential Windows*, a book produced by the Efficient Windows Collaborative, warm edge technology starts with the spacer system which separates and bonds the insulated glass units together. Innovations in this area include using less conductive materials like stainless steel or silicone foam, and incorporating dual seal systems that provide structural support and act as a moisture barrier. Figure "A" from the *Residential Windows* book shows a good example of a silicone foam spacer.

Warm edge technology helps improve the window's overall U-factor (which measures the rate of heat loss or gain through a material) by reducing conduction at the glass edge. Higher temperatures on the glass edge produce less condensation in severe temperatures.

Benefits of Vinyl Windows

While low maintenance features and durability are key features of vinyl windows, consider also the energy efficiency that can be gained with units.

Dozens of vinyl window manufacturers offer windows that can be constructed and ordered with glass packages that meet ENERGY STAR® requirements for different geographic areas and throughout the entire country. The ENERGY STAR designation on a window can translate into large energy savings for both commercial and residential projects.

A program created and funded by the U.S. Department of Energy and the Environmental Protection Agency, ENERGY STAR is a designation for a wide variety of products that meet certain energy performance criteria. In the United States there are three different climate zones identified in the ENERGY STAR program so that windows, doors and skylights can have their energy efficiency performance rated based on the climate of their areas.

Another benefit comes when clients and project owners discover the ease of vinyl window maintenance. With their resistance to rotting, decaying, pitting and insect damage, vinyl windows never need painting and can be cleaned easily with soap and water.

With the ever-changing code restrictions throughout the country, it's good to know that vinyl windows can meet or exceed many local, state and national codes. Manufacturers are continually developing products to handle increased wind loads and meet coastal conditions for specific areas. These advancements are being driven by industry response to changing weather patterns that make it necessary to plan for the increase of severe storms in all coastal locations throughout the country.

When an architect thinks of glass for windows in storm-prone areas, thoughts elevate to impact resistant glass. Constructed of two panes of glass with a heavy plastic interlayer, this glass also offers increased peace-of-mind against intruders. The combination of impact resistant glass within a sturdy, proven frame can be extremely powerful in protecting a house or building in storm-sensitive areas of the country.

Another advantage of impact resistant glass is the product's noise control value. Laminated glass helps significantly decrease noise on the interior of a structure. According to the North American Laminated Glass Information Center (LGIC), there is a wide range of sound isolation available from various window constructions, from low Sound Transmission Co-Efficient (STC) ratings in the 20's to high STC-ratings in the 50's.

For optimum noise reduction, specify laminated glass in a double-paned insulated glass (IG) window unit. The plastic interlayer has dampening characteristics which, when combined with the attenuating characteristics of the air space found in IG units, provides maximum sound reduction.

According to LGIC, two panes of a quarter-inch laminated glass in an IG unit with a half-inch air space will provide a STC rating of 42. This compares with a single pane of quarter-inch ordinary glass that has a STC rating of 31. LGIC therefore suggests that with laminated glass in an IG window unit, perceived noise transmission would be reduced by more than half when compared to an ordinary single-paned glass window unit.

Wondering what it will cost your client when vinyl windows are specified for a project? Information presented on the Vinyl by Design™ web site indicates that the installed costs and lifecycle costs of vinyl windows and glass doors are competitive with those of other framing materials. In many cases vinyl is the most affordable alternative product.

The accompanying chart (Figure B) includes information from R.S. Means 1999 data (reported on the Vinyl by Design web site). It shows that a double-hung solid vinyl window of average quality with insulated glass costs between $166 and $234, depending on size. The same quality of window with wood framing ranges from $199 to $289. In higher-end windows, you'll find even more impressive numbers. Premium vinyl windows with insulated glass range from $184 to $256, depending on the size. The same quality metal-clad wood window ranges from $224 to $380, while the vinyl-clad wood window ranges from $296 to $665.

	Vinyl	Wood	Metal
Double-Hung Window w/insulated glass	*$166–$234*	*$199–$289*	—
Premium Window w/insulated glass	*$184–$256*	*$296–$665*	*$224–$380*

Figure B

Juggling Shapes and Sizes

Vinyl window selections have greatly expanded in recent years. As architects have discovered that geometric window designs are now welcome in residential and commercial projects, they search for manufacturers who can meet their design needs. Uniquely shaped windows, such as circles, triangles and ellipticals are wonderful for specifying in children's rooms, libraries and schools.

Geometric windows can be found in abundance in today's marketplace. Architects can easily specify vinyl windows in half-round, quarter-round, eyebrow, octagon, oval and trapezoid shapes, plus a myriad of custom sizes and shapes. Sometimes matched or mulled with picture windows, these interestingly shaped window configurations offer an unlimited selection of design choices.

The customizable nature of vinyl windows can match the needs of even the most creative architect. Multiple unit window configurations can be reinforced with aluminum and/or steel to minimize deflections. This makes it especially easy to specify vinyl windows for use in large window wall configurations.

And, if glass windows alone are not enough to satisfy an architect's creative nature, some manufacturers even offer acrylic block windows within their vinyl frames. This provides obscurity, low maintenance and design appeal while offering the ultimate in privacy.

Options that Set Projects Apart

Looking for window features to help set projects apart? Upgrade options on vinyl windows are plentiful in the marketplace.

Consider real metal finishes on the interior and/or exterior frames of a window. It transforms a vinyl frame into a unique decorative element with the addition of rich brass, bronze, copper or nickel finishes. This upgrade option includes 95 percent real metal cold spray applied in the factory and hand buffed to perfection.

If metal finishes don't match up with your project, consider an interior woodgrain laminate on a vinyl window, such as oak or ash. The easy-to-maintain laminate finishes are designed to complement other wood features in a project.

Grids are another option that can set apart either a commercial or residential project. Whether looking for an elegant shadow bevel-cut glass that resembles cut glass crystal, or a colonial, diamond or perimeter grid pattern in flat or sculpted grids, they're all available from major vinyl window manufacturers. Some companies offer grids sandwiched between panes of glass in white, woodgrain or brass for easy cleaning.

Frame color options are also plentiful in the vinyl window industry. Along with standard colors of white and tan, some companies offer customized color options. Still other companies are researching paint options for vinyl windows, so that clients can change the color of their windows when ready for a new look.

Identifying Quality Vinyl Products

With vinyl windows, beauty is more than "skin deep." Most major manufacturers take special care to make sure their rigid, extruded vinyl is tough and dependable by either operating their own extrusion facility or obtaining vinyl from a high quality, reputable extruder. The resulting top quality vinyl product should not chip or deteriorate due to weather conditions.

The American Architectural Manufacturers Association (AAMA) has developed standards for vinyl extrusions to ensure impact resistance, dimensional stability and color retention. When selecting a vinyl window, look for the AAMA label on the unit or ask for AAMA testing results from the manufacturer to find the most durable products possible.

Through a variety of extrusion, calendering and molding processes, vinyl can be created in extremely rigid forms (such as pipes) or made as flexible as food wrap. When selecting vinyl windows for a project, examine a manufacturer's window. Vinyl needs enough impact modifiers so that it doesn't fracture when the temperatures drop below freezing. Try bending a nail fin or J-channel on a window. There should be some pliability, but not an excessive amount.

As you look at the window, make certain there are no pockmarks …or pitting in the frame and sash. There should be an even reveal around the glass and no warping at all. Similarly, make sure to look at the construction of the window. Frame and sash members that are heat plate welded (also generally called fusion welded) tend to offer higher protection from air and water infiltration than windows that are screwed together. The two mitered members are more solidly bonded with heat plate welding and can offer your clients longer lasting benefits.

As the *Residential Windows* book defines it, "Vinyl frames with heat-welded joints are stiffer than mechanically joined vinyl frames, so they provide excellent resistance to temperature and handling stresses both at the job site and during shipping. In some cases, a vinyl window assembly consists of both welded and mechanically fastened components. Interior webs also strengthen the frame, while improving its thermal performance."

Oceanfront homes with stunning walls of vinyl windows require minimal maintenance despite constant exposure to salt air and sea spray.

After determining if the window unit has been heat welded or mechanically fastened, look at the exterior of the window. Check to see if the profile is flat or beveled. A beveled exterior offers a more unique design element to your project and expedites the process of rain removal. The beveled profiles also reduce the aspect of acidic degradation because of faster water removal.

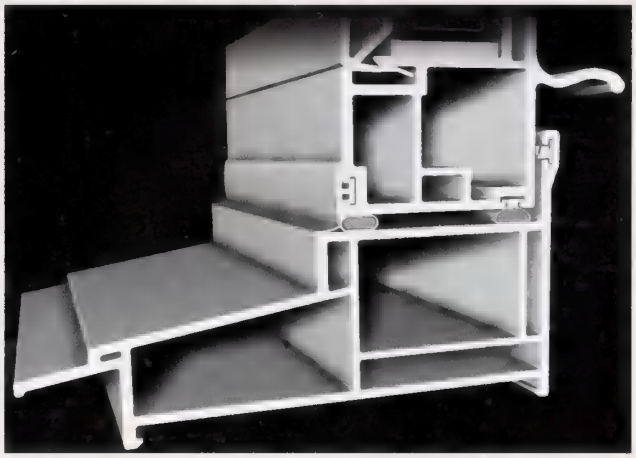
Another key element to look for is sill design. Sills can come flat, sloped, stepped, or in a pocket. During heavy rains, sloped (or stepped) sills force water away from the window more quickly than flat, conventional sills. And, pocket sills need to incorporate interior drainage systems.

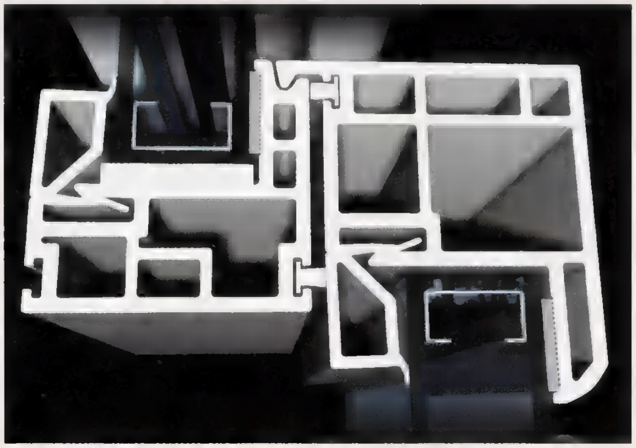
Now think about the inside of the window frame. Multi-chambered frames made of vinyl filled with dead air chambers help make a vinyl window energy efficient. If a window has an insulated frame, the hollow cavities are filled with an insulating agent, making them more thermally efficient. Fusion-welded frame and sash (as opposed to fastened window components) assure strong construction. Some manufacturers also offer triple compound-cut sills to reduce the potential of bowing and increase structural stability. Beveled exteriors, combined with miter-cut welded frames, help ensure squareness and structural stability.

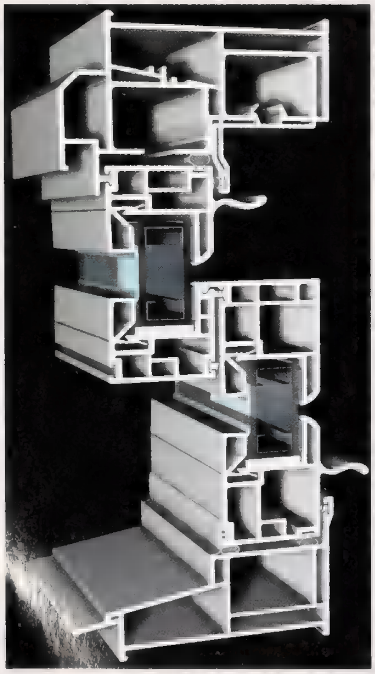
According to Veka, one of the industry's leading vinyl extruders, properties of vinyl make it the ideal material to reduce heat transfer because of its low U value. The chambers in the frame pieces further reduce the transfer of heat by creating air-isolating insulation cells. Increasing air space over three-quarters of an inch does not increase insulation value. However, taking the space and creating multiple and isolated air spaces does increase insulation value, much like layering clothes in the winter.

Veka also reports that multi-air-isolating chambers also reduce the tendency of the frame members to condense water vapor. The smaller and greater the cells, the greater the condensation resistance. Multi-cell design and rigidity also help reduce sound transmissions. The isolating air cells, and the stiffness of the frame members, reduce transmitted sound and conducted sound. Multiple chambers inside the unit

The growing use of geometric windows allows architects more creativity in both home and commercial designs.







Top:
Cutaway of a double hung welded, stepped and sloped sill section. Design facilitates water runoff and sill uses multiple air chambers for support and energy efficiency.

Middle:
Double weatherstripping and use of an overlapping/interlocking sash on this double hung meeting rail cutaway help reduce air infiltration. The two glazing towers along with the U-shaped stainless steel spacer are a good example of warm edge technology.

Bottom:
Full cutaway of a vinyl double hung window showcases the beveled exterior frame and the features shown above.

can significantly and positively impact the thermal performance and condensation resistance of the unit.

Now look closely at where the window's operating sash meets the frame. In a double hung unit, the meeting rail should overlap and interlock with the sash for a tight seal. This virtually eliminates water and air infiltration. The meeting rail should also feature durable weatherstripping to protect against air infiltration. Top-of-the-line manufacturers offer interwoven durable weatherstripping for the ultimate in strong construction.

Vinyl is Final

The bottom line for many architects is, why should I specify vinyl windows? Here's the answer. Architects today deal with clients who are savvier than ever before—especially about maintenance-free products that will make their lives easier.

Over the past decade, your clients have been mightily impacted by the influx of home improvement magazines, radio shows, web sites and television shows. As a result, knowledge levels related to alternative products have increased. This has led to changes in how engineered plastic products are viewed. No longer are they thought of as "cheap" ... now people value them more correctly for their low maintenance and energy efficiency features.

When should architects specify vinyl windows? Whenever they're looking for a durable, reliable product with outstanding design capabilities.

Research is critical in the specification of vinyl windows. Architects need to consider the quality of vinyl used, construction processes, reputation of the manufacturer, product warranties and how innovative the manufacturer is with new product introductions. How a vinyl window manufacturer responds to changing market needs is a key indication of the quality of their company ... and their windows. Remember, price is important, but it's not the most important thing. The old adage "you get what you pay for" is true when specifying windows. Service support in the future is a critical aspect that architects should research just as adamantly as product quality.

Another tip for selecting and specifying vinyl windows is to make certain the products selected meet today's building codes. Even better, choose products that exceed codes to assure the windows will serve your clients well for the long term. Remembering that AAMA and NFRC certified windows have met high standards will certainly lead you to the best products in the marketplace.

Finally, to gain a greater understanding on vinyl windows, contact the resources available to you in the marketplace. Visit Vinyl by Design at www.vinylbydesign.com for a look at design considerations, selection and manufacturing processes of vinyl windows. The Vinyl Institute (703-253-0700 or www.vinylinfo.org), American Architectural Manufacturers Association (847-303-5664 or www.aamanet.org) and the National Fenestration Rating Council (301-589-6372 or www.nfrc.org) all have materials available to architects. You can also visit www.energystar.gov for more information on the ENERGY STAR program or www.wdma.com (or 800-223-2301) for materials from the Window and Door Manufacturers Association. And, the Efficient Windows Collaborative web site (www.efficientwindows.org) provides valuable details on choosing windows, including fact sheets and computer simulations for different type houses using a variety of windows in over 50 U.S. cities. ■

Copper finishes on the interior of these vinyl windows transform the windows into a decorative accent for the house.

Click for Additional Required Reading

As part of this CES Learning Activity, you are required to read several case studies online. They will give you examples of how vinyl windows were incorporated into a variety of projects to successfully solve some design challenges. To access the article online, visit *www.architecturalrecord.com/CONTEDUC/ConteducC.asp* or http://ar.simonton.com. To obtain a faxed copy of the article, call Simonton Windows at 1-800-SIMONTON. Test questions related to the online material are included below.

Learning Objectives

- *Explain the features, benefits and attributes of vinyl windows.*
- *Describe design options that set vinyl windows apart.*
- *Convey information on quality production of vinyl windows.*

Instructions

Refer to the learning objectives above. Complete the multiple choice questions below. Then go to the continuing education reporting form on page 192. Include the answers to these questions on the reporting form. Follow the instructions on the reporting form carefully. Fill out the form and mail or fax it to the address provided to receive one AIA/CES Learning Unit including one hour of health safety welfare credit. You may also go to the continuing section on *www.architecturalrecord.com* to read the course, answer the questions, print out the reporting form at the end of the course, fill it out and mail/fax the form to the address provided on the reporting form.

Questions

Q: 1. True or False: Vinyl is susceptible to rust.
A: a. true
b. false

Q: 2. For optimum noise reduction, specify:
A: a. low E glass
b. double pane windows
c. argon-filled laminated glass
d. laminated glass in a double-paned insulated glass window unit

Q: 3. Fill in the blanks: Vinyl windows can be used in large window wall configurations by reinforcing multiple unit window configurations with ____________ and/or ____________ to minimize deflections.

Q: 4. When examining a manufacturer's window, if you try to bend a nail fin or J-channel on a window there should be:
A: a. no resistance at all
b. some pliability
c. complete flexibility

Q: 5. What are the top two (2) benefits to specifying vinyl windows?
A: a. cost option versus all other types of windows
b. availability for both new construction and remodeling applications
c. low maintenance
d. energy efficiency

Q: 6. True or False:
Vinyl frames with heat-welded joints are more securely structured than mechanically joined vinyl frames.
A: a. true
b. false

Q: 7. To help ensure squareness and structural stability, look for windows with:
A: a. fastened window components
b. beveled exteriors and miter-cut welded frames
c. built-in leveling systems
d. flat exteriors

Q: 8. What kind of glass would you specify in an oceanfront home to provide the greatest protection from storms?
A: a. impact resistant glass with plastic interlayer
b. single-pane glass with shuttering system
c. dual-glazed glass
d. krypton-filled glazed glass

Q: 9. Upgrade options available on vinyl windows include all but which:
A: a. metal finishes
b. real wood exteriors
c. grids
d. frame colors

Q: 10. The energy efficiency of vinyl windows is achieved by which two factors:
A: a. solid window construction
b. the protective covering surrounding the window during shipping
c. requesting a specific energy saving glass package
d. real metal finishes that protect the window and add a decorative look.

About Simonton Windows® Simonton Windows®, a leading manufacturer of vinyl replacement and new construction windows, offers a wide assortment of low maintenance, high quality products for residential and commercial projects. Founded in 1946 in West Virginia, Simonton Windows' hallmarks include outstanding customer service and delivery of "made-to-order" windows in seven days or less under normal business conditions. The company has manufacturing facilities in Pennsboro, Harrisville, St. Marys and Ellenboro, W.Va.; Paris, Ill.; and Vacaville, Calif. A new facility is planned in 2002 for McAlester, Okla. For more information on Simonton Windows, call (800) SIMONTON or visit www.simonton.com on the Internet.

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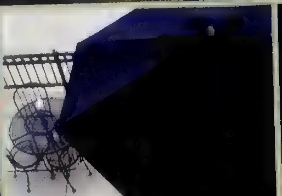

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New Products

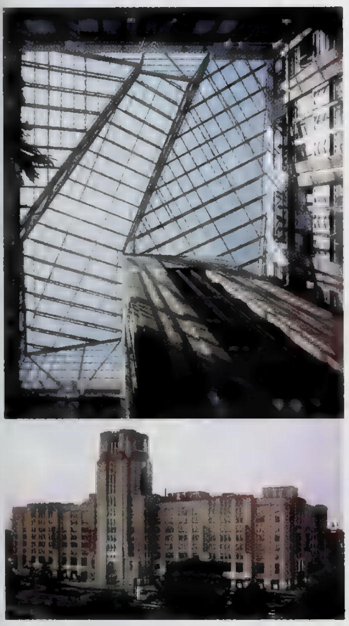
While the overall window and door market may be down a few percent in 2002, manufacturers haven't stopped developing new **window and skylight** technologies, such as the historic replications shown below. New trends include an **increase in the number of windows per home**, the adoption and implementation of new energy requirements, and improved style throughout the entire market. *Rita F. Catinella*

New windows appear historic without sacrificing energy efficiency

Bruner/Cott & Associates of Cambridge, Massachusetts, has earned a reputation designing new, energy-efficient window systems that are visually indistinguishable from the historic originals. Two projects—the Watertown Arsenal in Watertown, Massachusetts, and Landmark Center in Boston—showcase their talent for window replacement and restoration.

At Watertown Arsenal, a 750,000-square-foot former U.S. Army manufacturing arsenal, Bruner/Cott developed a system of replicating original steel sash with insulated glazing units. The renovated buildings feature more than 1,000 custom-designed aluminum, double-hung sliding sash with thermally broken insulated glazing. The firm worked with window subcontractor J.K. Glass to design the windows to replicate exactly the lines of the original wood and steel ones, using styles appropriate to each building's historic period (1850s–1950s).

Landmark Center was originally developed in 1929 by Sears, Roebuck & Company. In addition to completely replacing 1,100 steel-sash units at Landmark Center with energy-efficient aluminum framed windows, and fully restoring several hundred existing steel sash, the firm also built two new 5,000-square-foot atria with vast glass skylights. The angular, asymmetrical planes of the skylights were a contemporary interpretation of the building's original Art Deco design. 800/345-7899. Architectural Skylight, Westboro, Maine. **CIRCLE 200** 617/578-0800. J.K. Glass, Boston. **CIRCLE 201** 207/761-4455. Fenestra, Portland, Maine. **CIRCLE 202**



15,000 square feet of glass make up each atria of the Landmark Center.

The Watertown Arsenal required more than 1,000 new windows.

New vision for vinyl windows

Visions 2000 vinyl windows and doors from Weather Shield come in a multitude of shapes and sizes that allow builders and remodelers to customize projects. Visions 2000 vinyl windows are available in single- and double-hung, single- and double-slide, casement and awning, and direct-set styles. All Visions 2000 windows come standard with an integral nailing fin and fusion-welded corners for increased strength and durability. A multichamber frame and sash design reduces seasonal expansion and contraction.

Weather Shield Visions 2000 windows feature accessory grooves that can accommodate a number of snap-on add-ons to ease installation. Available solutions for installation challenges include mull covers to eliminate unsightly grooves between the windows and a full vinyl jamb extension that matches any interior wood trim for easy finishing.

Customizable alternatives include a full selection of glazing options for energy efficiency and ultraviolet protection, including Low-E^2 glass; vinyl extrusions available in true painter's white or tan; and a comprehensive selection of grilles.

Vision 2000 doors are available in sliding patio, in-swing or out-swing patio, and furniture entrance door styles. 800/477-6808. Weather Shield, Medford, Wis. **CIRCLE 203**

An array of window styles are possible with the Vision 2000 series of vinyl products.

◂ Welcoming windows

A key component of the warm environment at the Baptist Memorial Hospital in Collierville, Tennessee, is the window system from Wausau Windows and Wall Systems. Wausau worked with Nashville-based architectural firm Earl Swensson Associates on the project, which features windows with integral venetian blinds and green reflective glass to produce a state-of-the-art image. 877/678-2983. Wausau Window and Wall Systems, Wausau, Wis. **CIRCLE 204**

▴ What the doctor ordered

The renovation and addition at the College of Pharmacy building at the University of Iowa, by Brooks Borg Skiles Architecture Engineering of Des Moines, has an exterior that blends aluminum and concrete. As a final touch, the 69,300-square-foot facility features Moduline's custom Evenline Series window with venetian blinds and its Preferred Pressure Wall System. 800/972-9110. Moduline, Wausau, Wis. **CIRCLE 206**

▸ Glowing pyramid

Glass Architects of Santa Rosa, California, designed Empire College with a large ATS skylight system set atop the entrance that creates a glowing pyramid visible at night. Provided by Skywall Translucent Systems, ATS is a self-supported, 24' x 24' guttered, dry-glazed, thermally broken, and drainable system. 800/869-4567. Skywall Translucent Systems, Terrell, Tex. **CIRCLE 205**

▴ Mall-rat heaven

Naturalite collaborated with Elbasani & Logan Architects of Berkeley, California, for three years to provide working details of the custom skylights for the Stonebriar Mall in Frisco, Texas. The advance planning coupled with the flashing design of the BMS-3000 Skylight System enabled Naturalite glaziers to install the skylights before the flashing. This meant the general contractor could finish the roofing after the skylights were in place. 800/869-4567. Naturalite Skylight Systems, Terrell, Tex. **CIRCLE 207**

▴ Daylighting libraries

Kalwall window systems' structural composite sandwich panel is formed by permanently bonding specially formulated fiberglass-reinforced translucent faces to a grid core constructed of interlocked structural I-beams made of aluminum or composite materials. Kalwall's Replacement Window System (above) is factory preengineered for easy installation from inside or out with minimum interruption to the use of the building. Kalwall's system is suitable for a variety of applications, including the tricky task of daylighting libraries. The windows are glare free, help protect precious items from direct sunlight, and are inherently energy efficient. The University of Rhode Island Library in Kingston, Rhode Island, is shown directly above. 603/625-5403. Kalwall, Manchester, N.H. **CIRCLE 208**

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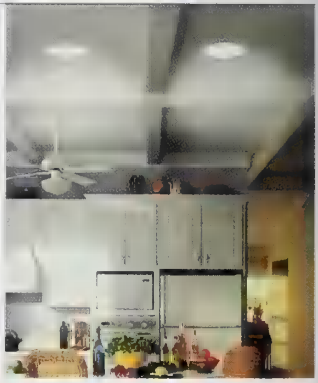
► Black is the new sandstone

In response to an increase in custom requests for black cladding, Norco has introduced that color to its spectrum of color options available in aluminum-clad windows. Black is the newest addition to a color range including white, brown, sandstone, Hartford green, burgundy, and vanilla cream. Norco clad wood windows are crafted with a heavy-duty extruded aluminum cladding on the frame and sash. While some window brands use vinyl nailing fins or roll-form aluminum on the sash, the extruded aluminum on Norco's clad windows preserves each window's uniformity and structural integrity. 800/877-9482. Norco, Hawkins, Wis. **CIRCLE 209**

▲ Gold and platinum members

The PRISM line of replacement windows and doors from Simonton is highlighted by the Platinum collection. Centered around fusion-welded construction, PRISM Platinum's design is anchored by the Double-Hung. Both moveable sash operate effortlessly, aligned through a system to ensure performance throughout the life of the window. Possessing many of the same attributes as Platinum, Gold windows offer strength and performance at a budget-conscious price. 800/SIMONTON. Simonton Windows, Parkersburg, W.Va. **CIRCLE 210**

► Sunroofs for the home



ODL offers 10" and 14" skylights with one-piece flashing systems that eliminate roof leakage. Each roof flashing system has been designed for use on specific roof types, such as tile, asphalt, slate, wood shake, flat, and pitched roofs. UV-resistant acrylic domes and a prismatic diffuser in the ceiling located at the end of the tube shaft help spread light evenly throughout the room. 800/253-3900. ODL, Zeeland, Mich. **CIRCLE 211**

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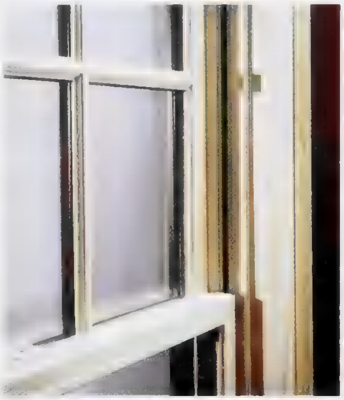

▲ Concealed jamb liner

Pozzi's Precision Double-Hung window features a new concealed jamb liner. Standard features include clear insulating glass with UltraEdge warm-edge technology, noncompression tilt balances equipped with block and tackle mechanisms for smooth operation, and hardware available in white, bronze, or champagne. 800/877-9482. Pozzi Wood Windows, Bend, Ore. **CIRCLE 212**

▼ Tougher clad products

Marvin now uses extruded aluminum on both sash and frame and a finish that exceeds the industry's toughest specification, the American Architectural Manufacturers Association 2605-98. Marvin also uses a 70 percent Kynar or Hylar coating for weatherability, and Flurospar, a formulation for added protection against dents or scratches. 888/537-8266. Marvin Windows and Doors, Warroad, Minn. **CIRCLE 213**

▲ Room with a view

Vetter provides a premium line of wood and vinyl windows. All exterior wood components are factory-primed and treated with a wood preservative. Vetter offers eight standard clad colors, including ivory, brick red, and dark bronze. Standard glass is ¾" dual-seal insulated. Other options include HiPro4 argon-filled high-performance Low-E glass; Bronze or Gray tints; and obscure, tempered, or high altitude. Vetter's Ashford Collection, shown here, includes premium windows for new construction, remodeling, and replacement markets. 800/VETTER-2. Vetter, Mosinee, Wis. **CIRCLE 214**

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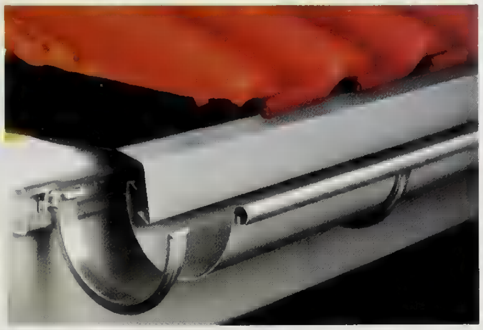
Product Briefs

◄ Cast-concrete creations

Arizona-based designer Larry Kornegay has created a series of cast-concrete planters for use in landscape design. The containers are available in natural concrete color as well as a palette of integral colors. The series features several designs in various sizes that accent landscaping without overwhelming other elements. Also included in the series are accent pavers, platforms, and the Leaf Rush bench shown here. The bench surface features a combination of smooth concrete and impressed botanical leaf patterns. The top is mounted to a steel stand, available in natural or rust patina finish. The bench is 54" long x 18" wide x 17" high. 480/967-6787. Kornegay Design, Tempe, Ariz. **CIRCLE 215**

► Child-compliant

Elkay Manufacturing Company has introduced the first line of single-level, barrier-free watercoolers and drinking fountains designed specifically to meet Child ADA requirements, providing full accessibility for children 12 and under. All models also feature Elkay's No Lead design, which regulates the levels of contaminants that can leach from drinking-water devices. Available with wall and mounting plates. 630/574-8484. Elkay, Oak Brook, Ill. **CIRCLE 217**



▲ It's a snap

The Rheinzink snap-lock bracket system simplifies installation of bracket-mounted gutters, reducing cost and time. The new system consists of a C-profile mounting rail and twist-in gutter brackets. Using screws, the mounting rail is fastened directly to the eaves. With a simple twist, the gutter brackets can be installed at any point on the mounting rail. Gutters are then securely and permanently installed with a simple click. Suitable for all eaves situations, the installation can be done independent of roofing. 617/948-2520. Rheinzink Canada, Boston. **CIRCLE 218**

Product of the Month

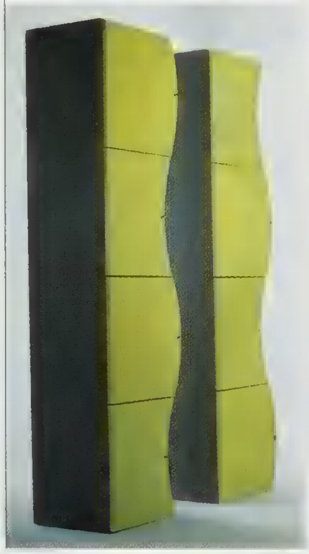
Formaldehyde-free fiberglass

Johns Manville will now manufacture a new line of entirely formaldehyde-free fiberglass building insulation for residential and commercial use. The insulation features a new binder composed of an acrylic resin rather than a phenol-formaldehyde binder. The change addresses concerns about indoor air quality in relation to building materials containing formaldehyde. Included in the line is EasyFit perforated fiberglass insulation. Vertical perforations in the fiberglass batts allow each section to be separated by simply tearing it apart instead of cutting, saving time. 800/654-3103.

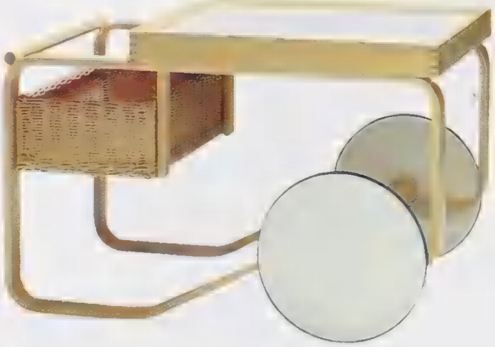
Johns Manville, Denver. **CIRCLE 216**

▼ Cabinet curves

The door fronts of the Blister cabinet are dimpled in either concave or convex curves. The body, a modular grid available either one-by-four-units high or two-by-four-units high, is made of melamine-covered wood with polystyrene door fronts in ivory, orange, or blue. Blister was designed in 1996 by Platt & Young for the Italian furniture manufacturer Driade, whose collection also features pieces by such designers as Philippe Starck, Konstantin Grcic, and Oscar Tusquets and will now be available through M2L in its showrooms in New York and Washington, D.C. 212/228-3600. The M2L Collection, New York City. **CIRCLE 219**



Product Briefs



► Aalto alliance

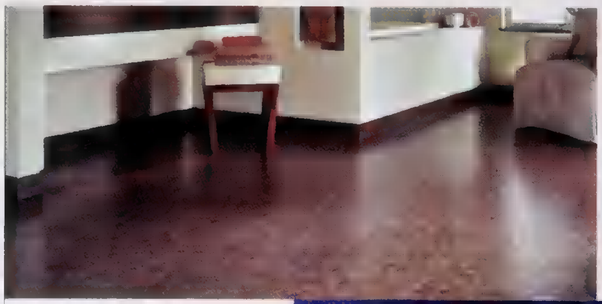
Herman Miller announced an alliance with Finnish furniture manufacturer Artek to market the company's popular Aalto line in the United States. Artek was founded in 1935 to manufacture furniture designs by Finnish architect Alvar Aalto and his wife Aino. The Herman Miller offering will include such signature pieces as the Aalto Tea Trolley, 3-Leg and 4-Leg Stools, and the Aalto easy chair, or "Tank Chair." 800/851-1196. Herman Miller, Zeeland, Mich. **CIRCLE 220**

► Friendly fabrics

In response to the increased demand for environmentally responsible products, Maharam has introduced the Content series, a grouping of six textile designs engineered and manufactured to reduce environmental impact. Woven of 100 percent worsted wool, all six patterns feature subtle weave changes and an extensive color palette ranging from neutrals to brights. 800/645-3943. Maharam, New York City. **CIRCLE 221**

▼ Refrigerator recordings

The new Amana Messenger Refrigerator has a built-in voice-memo function that allows you to leave voice messages for other household members with the touch of a button. It also monitors a variety of refrigerator functions and alerts you if the door is ajar, if the air or water filter needs to be replaced, or if there's been a power outage. It also features a front-fill dispenser that accommodates large containers and simultaneously dispenses water and ice. Available in white, black, bisque, and a stainless-steel version. 800/843-0304. Amana, Newton, Iowa. **CIRCLE 223**

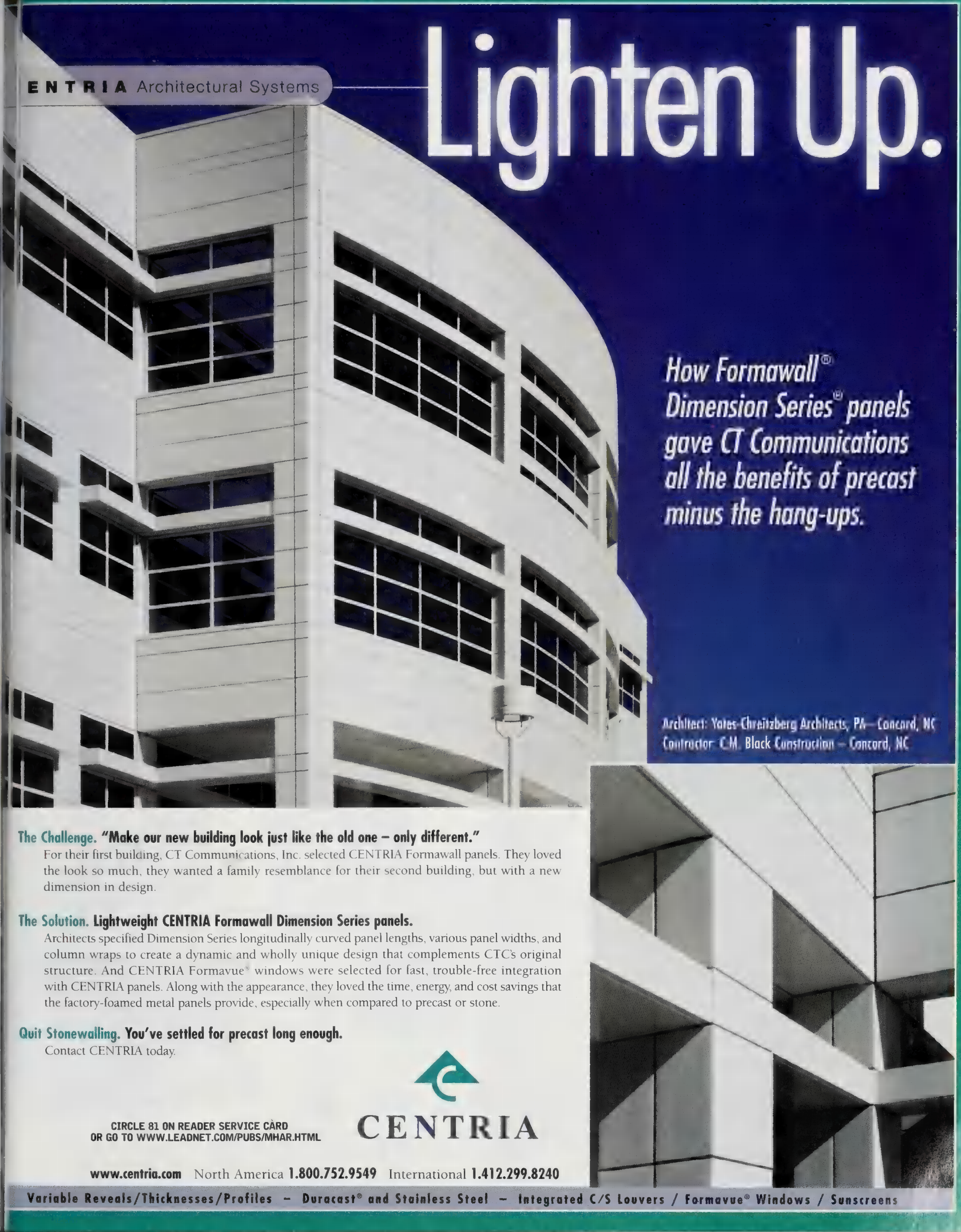


▲ New linoleum looks, fun ceilings

Recognizing linoleum's resurgence in the residential marketplace, Armstrong has introduced a new generation of linoleum flooring. With a palette of 16 different colors, Marmorette offers the most extensive color selection for linoleum flooring. Armstrong has also added an "Under the Sea" family of designs to its line of Cirrus Themes acoustical ceiling panels. The new product features a variety of lighthearted designs that are carved into the acoustical panels' fine-textured surface, making them ideal for spaces such as pediatric wards, doctors' and dentists' offices, schools, and day-care centers. 877/ARMSTRONG. Armstrong, Lancaster, Pa. **CIRCLE 222**

▲ The look of stone

Milestone Mosaics are the first thru-body porcelain stone-look mosaics. The 3" x 3" tiles have a subtle, multicolored slate finish that makes them suitable for both interior and exterior applications. The colored porcelain surface will not wear out, even in heavy-duty installations, since the pigment becomes an integral part of the tile during the firing process, rather than applied as a glaze. This procedure lets the body of the tile show through, allowing it to become part of the overall design. Like real stone, there is significant color and texture variation. 931/484-2110. Crossville Porcelain Stone, Crossville, Tenn. **CIRCLE 224**



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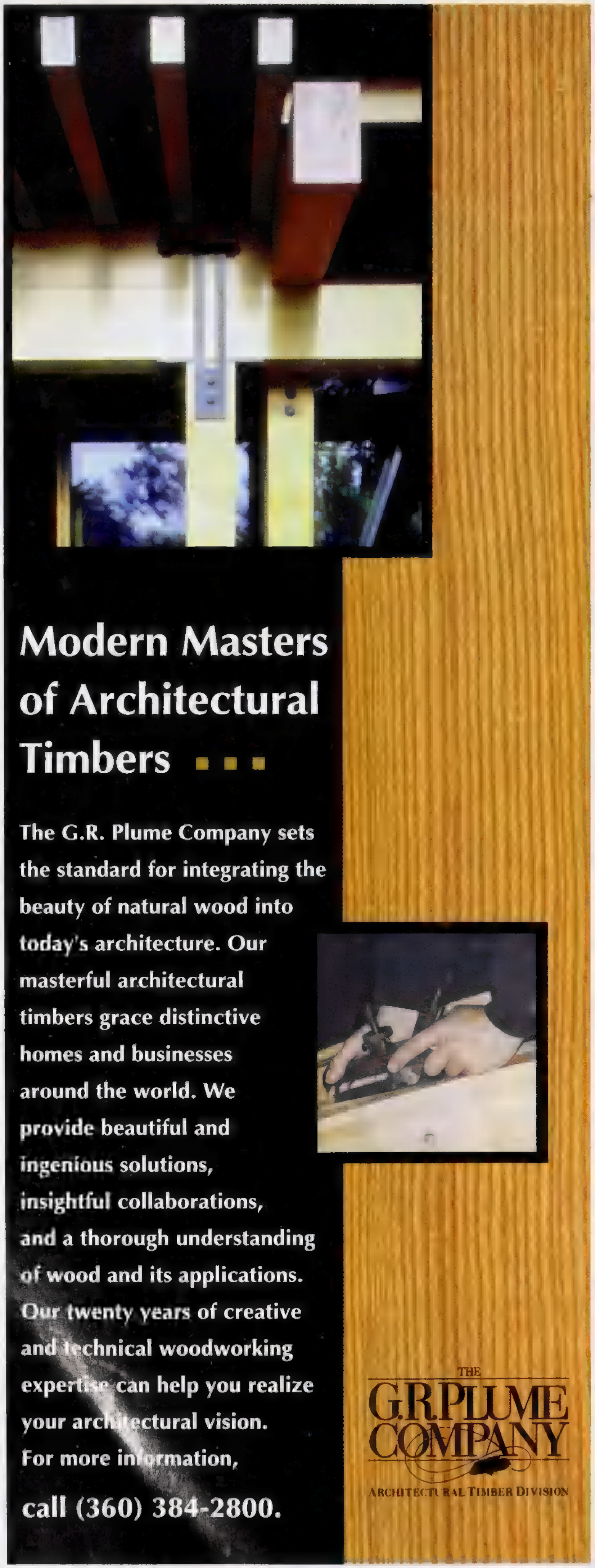
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Product Literature

Commercial downlighting

Lithonia Lighting has released a 28-page, full-color catalog that showcases its new family of recessed downlighting for commercial applications. The catalog features ordering information and performance data and also includes a Lighting Guide that simplifies the fixture-selection process. 770/992-9000. Lithonia Lighting, Conyers, Ga.
CIRCLE 225

Revised zinc-cladding book

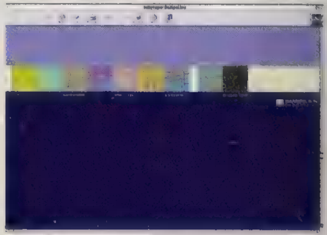
The second edition of the textbook *Rheinzink Applications in Architecture* gives architects, building owners, and craftsmen a complete overview concerning Rheinzink zinc cladding. 604/291-8171. Rheinzink Canada, Burnaby, British Columbia. **CIRCLE 226**

Safety-flooring catalog

Altro has introduced a new catalog to showcase their entire safety-flooring range. All of the colors in the Altro high-performance safety-flooring collection are shown along with installation photography. The catalog is part of a comprehensive product-information series provided by Altro. 800/565-4658. Altro, Mississauga, Ontario. **CIRCLE 227**

NEW SITES FOR CYBERSURFING

Redesigned site includes a custom floorcovering Web tool called DesignLine



Online. **www.mannington.com**

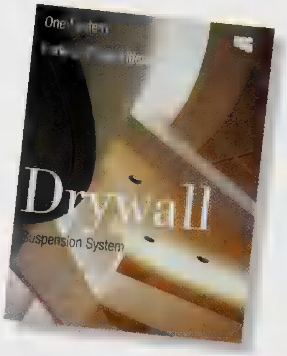
Kentucky Wood Floors complete product line. **www.kentuckywood.com**

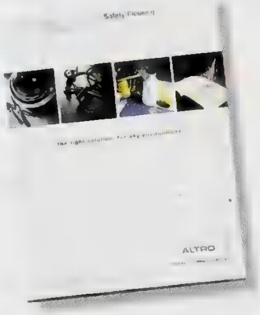
Presentation product information. **www.da-lite.com**

Technical information on working with and specifying North American hardwoods. **www.hardwoodcouncil.com**

Free systems guide/reprints

The new 50-page systems guide from USG provides full product information, installation details, and specification data on the company's Drywall Suspension System. The free guide describes the system's entire line of components and accessories. USG also offers a free set of reprints for its Architectural Record/AIA 2001 Continuing Education Series. Reprints of five articles can be ordered by calling 888/874-2450. 800/USG-4YOU. USG, Chicago. **CIRCLE 228**





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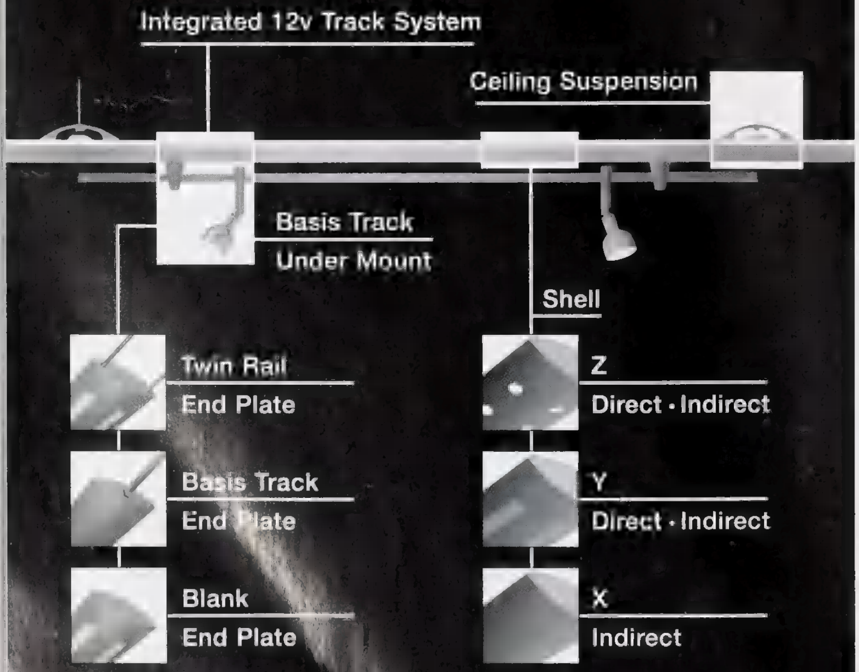

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Product Literature

Louver catalog

Greenheck's new catalog highlights the company's comprehensive selection of louvers. It includes mechanical and architectural louvers, rain-resistant louvers, louvered penthouses, architectural equipment screens, custom grilles and brick vents, architectural shades, and Miami-Dade County–qualified louvers. 715/359-6171. Greenheck, Schofield, Wis. CIRCLE 229

Three in one

For the first time in its history, Armstrong's Commercial Flooring catalog includes all three of the major product categories the company offers: hardwood, linoleum, and vinyl. Totaling 196 pages, the new 2002 customer-tailored reference tool features new tabs that call out individual product groupings. 877/ARMSTRONG. Armstrong World Industries, Lancaster, Pa. CIRCLE 230

Daylighting ideas

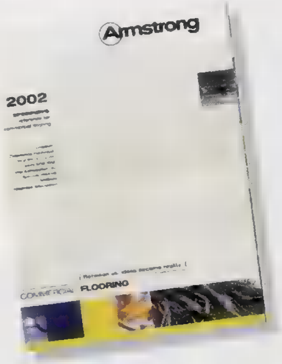
Major Industries marks its 22nd year by introducing its newest translucent daylighting idea book. This 24-page brochure offers designers a range of insulated translucent fiberglass sandwich panel system ideas. The idea book features skylights, wall panels, and curved systems. 888/SKYCOST. Major Industries, Wausau, Wis. CIRCLE 231

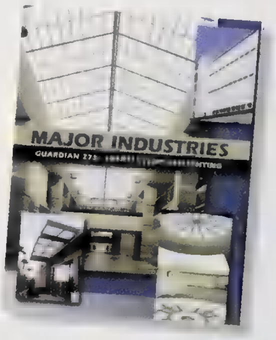
Wood products buyer's guide

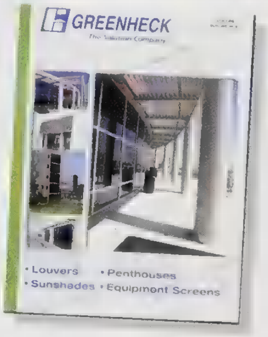
The Southern Forest Products Association has published the 2002 issue of *SFPA Buyer's Guide*, containing a complete listing of products and services available from its members. This annual directory contains the full range of products manufactured, mill capacities, grade separations, services, and equipment, and more than 40 speciality items produced by member mills. 504/443-4464. South Forest Products Association, Kennar, La. CIRCLE 232

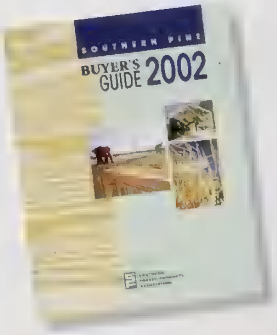
Modular space guide

A new CD from GE Capital Modular Space serves as a user-friendly guide to the modular construction process. It showcases an upscale, modular office complex that the company provided for Southwest Marine in San Diego. Photographs, floor plans, and editorial coverage of the building also are included. The CD guide runs on PCs. 800/523-7918. GE Capital, Devon, Pa. CIRCLE 233









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Record Interiors 2002

The editors of ARCHITECTURAL RECORD announce the RECORD INTERIORS awards program. This program is open to any registered architect. Of particular interest are projects that incorporate innovative programs, building technologies, and use of materials. The entry fee is $50 per submission; please make checks payable to ARCHITECTURAL RECORD. Submissions must also include plan(s), photographs (transparencies, slides, or prints), and a brief project description bound firmly in an 8 1/2-by-11-inch folder—postmarked no later than April 30, 2002. Anonymity is not necessary. Winning entries will be featured in the 2002 RECORD INTERIORS. Other submissions will be returned or scheduled for a future issue. Please include a self-addressed envelope with the appropriate postage, and allow 10 weeks for return.

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Contact person: ______________________________

Name of project: ______________________________

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If previously (or scheduled to be) published, please state name of magazine and publication date:

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Agreement: We will not offer this project for consideration by another national design magazine during the 10-week review period at ARCHITECTURAL RECORD.

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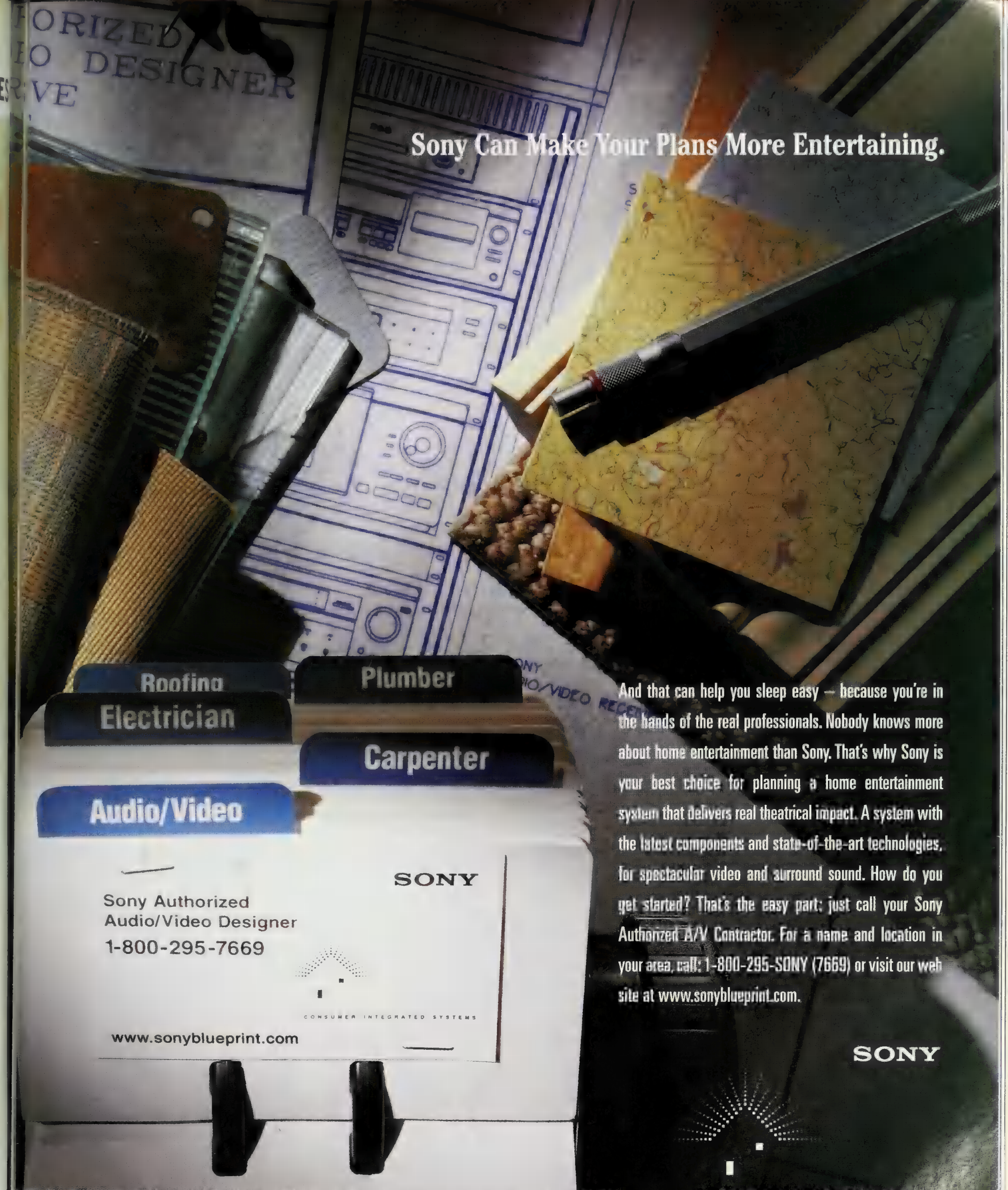

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CONTINUING EDUCATION

Program title: **Architects Discover the Flexibility of Lightweight and Durable Fabrics (04/02, page 141)** 04YEDITP

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3.	a	b	c	d	**8.**	a	b	c	d
4.	a	b	c	d	**9.**	a	b	c	d
5.	a	b	c	d	**10.**	a	b	c	d

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Material resources used: Article: This article addresses issues concerning health and safety.

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Architectural Record Editorial Wins 2002 Jesse H. Neal Awards

The American Business Press's Jesse H. Neal Awards are a celebration of a year in b-to-b editorial excellence and are presented annually to those editors who have exhibited journalistic enterprise, service to the field, and editorial craftsmanship. Again this year, *Architectural Record* was honored, this time for the following editorial achievements.

2002 Jesse H. Neal
National Business Journalism Award
Best Single Issue of a Magazine for *Architectural Record*—February 2001 issue

*

2002 Jesse H. Neal
National Business Journalism Awards—Finalist
Best News Coverage for "World Trade Center—1973-2001"
Architectural Record - Editors John Czarnecki, Deborah Snoonian, Kevin Lerner, Sara Hart

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2002 Jesse H. Neal
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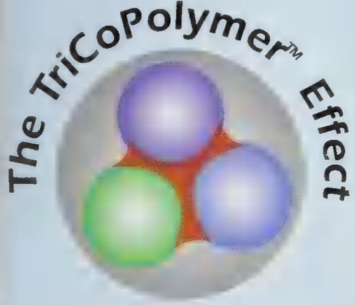

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Dr. Smooth Mud has been developed by top chemists and finishers to replace the bad habit of thinning joint compounds with water. With proper application and use, Dr. Smooth Mud improves all joint compounds. Products that benefit from using Dr. Smooth Mud also include quick-set joint compounds, white gypsum cement, and plasters.

Thinning with water over-expands gypsum molecules, weakens bonding agents, and amplifies shrinkage. Dr. Smooth Mud protects spherical gypsum and its surrounding molecules by increasing covalent bonds and locking minerals in an ordered structure. The result is 100% smoother joints without flaking, powdering, or shrinking.

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Program title: **High Performance Windows and Doors: Achieving Durable Finishes, sponsored by Marvin Windows and Doors, *Architectural Record* (04/02, page 157)** 04YSPONX

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3.	a	b	c	d	**8.**	a	b	c	d
4.	a	b	c		**9.**	a	b	c	
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Program title: **Vinyl Windows Come of Age, sponsored by Simonton Windows, *Architectural Record* (04/02, page 167)** 04SPONZ

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2.	a	b	c	d	**7.**	a	b	c	d
3.	________	and/or ________			**8.**	a	b	c	d
4.	a	b	c		**9.**	a	b	c	d
5.	a	b	c	d	**10.**	a	b	c	d

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AIA

Notice of AIA Convention Business Items and Candidates

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Eugene C. Hopkins,
FAIA
Michigan

FOR SECRETARY

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Livergood, AIA
Illinois

Larry M. Schneider,
AIA
Florida

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AIA
Washington

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FAIA
Illinois

Michael L. Prifti, AIA
Pennsylvania

Katherine Lee
Schwennsen, FAIA
Arizona

For candidates' statements and the full text of the Bylaws motions and resolution visit the AIA Web site at www.aia.org.

Wayne Silberschlag,
AIA
Iowa

The AIA Board of Directors is sponsoring amendments to the AIA Bylaws and has stated its support for a resolution scheduled for consideration by the delegates at the annual business meeting in Charlotte May 11. Bylaws amendments require the approval of a two-thirds majority of all votes accredited to be cast at convention, while resolutions require approval by a simple majority.

Bylaws Amendment 02-A

Term of the Student Director on the Institute's Board of Directors. The Institute's officers and regional directors take office in December each year. The president of the American Institute of Architecture Students (AIAS) is also a member of the Institute's Board of Directors, but his or her term as AIAS president begins each year on July 1 and continues until June 30 of the following year. This proposed amendment would revise Section 6.03 of the Bylaws to confirm current practice, specifying that the individual who is AIAS president at the adjournment of the annual AIA Board meeting in December shall serve on the Institute's Board from that point until the Board's next annual meeting the following December.

Bylaws Amendment 02-B

Apportionment of Regional Directors. The Institute's Bylaws require that delegate representation at the Institute's annual meeting be based on the total number of assigned Architect and Associate members. By contrast, the count used to determine the apportionment of regional directors is currently based on the number of Architect members (including Emeritus members) only, and does not include Associate members. This amendment would revise Section 6.012 of the Bylaws to provide that the count used to determine regional director apportionment would include both assigned Architect members and assigned Associate members in good standing.

Bylaws Amendment 02-C

Inclusion of Associate Representative on the Institute's Executive Committee. Associate members are currently represented on the Institute's Board of Directors by an associate director, but do not have a representative on the Executive Committee. This amendment would provide that, upon the completion of his or her one-year term on the Board, the associate director would become a voting member of the Executive Committee. This position would be added in December 2004.

Bylaws Amendment 02-D

Creation of an International Associate Membership Category. Individuals who have an architectural license or the equivalent from a non-U.S. licensing authority and demonstrate honorable standing in the profession in the locale in which they are licensed are eligible for Associate membership within the Institute. Under current practice, these individuals are commonly referred to as "International Associates." This amendment would revise Section 2.2 of the Bylaws to create an "International Associate" membership category for which such individuals would be eligible.

Also to be considered for a vote at the convention is a resolution submitted by AIA Philadelphia, "Broadening Membership and Strengthening the Institute," which the Institute's Board of Directors has voted to support. The resolution would allow a limited number of components to run pilot programs designed to increase their membership. Results of the pilot program will be measured and reported to the components annually.

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BI ☐ Landscape Architect
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CC ☐ Interior Design/Space Planning
CD ☐ Urban Planning/Architecture
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DB ☐ 2 - 9
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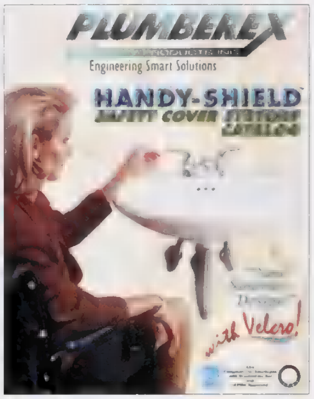

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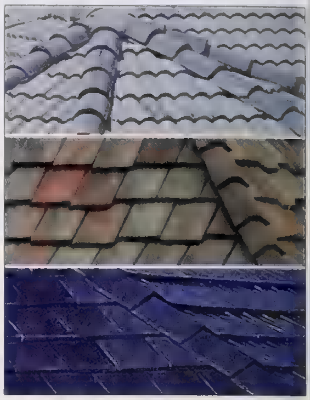

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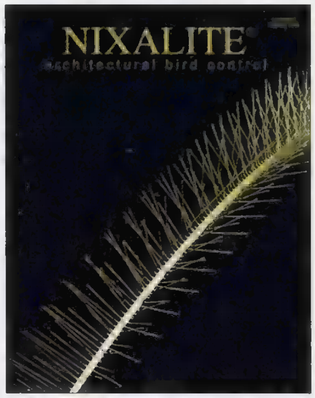

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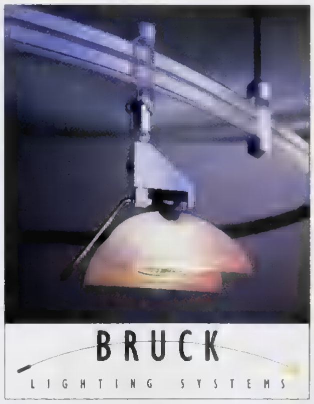

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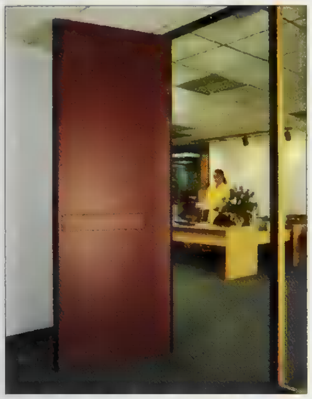
Applications



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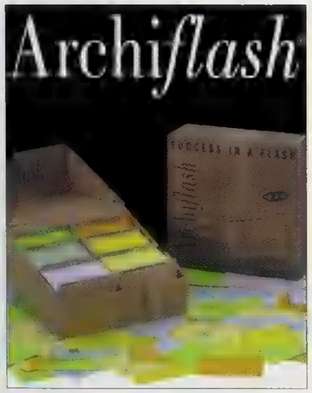

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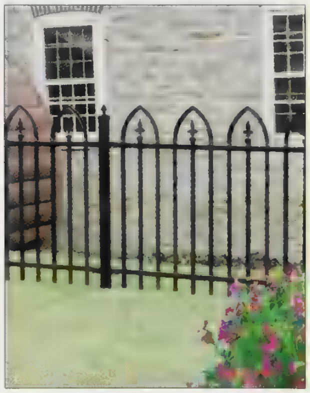

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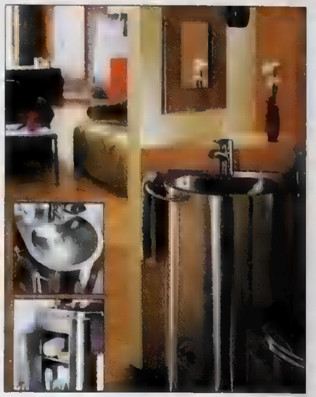

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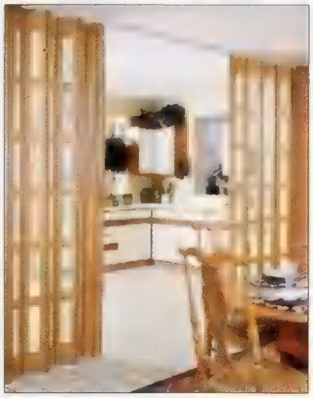

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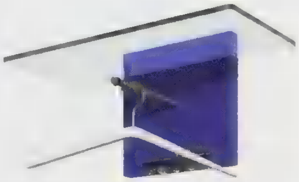

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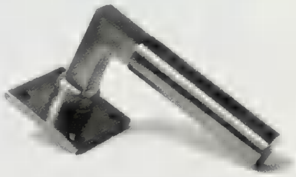

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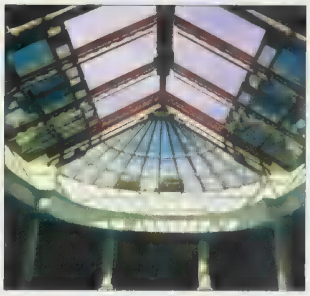

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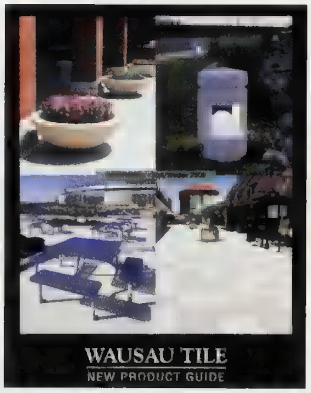

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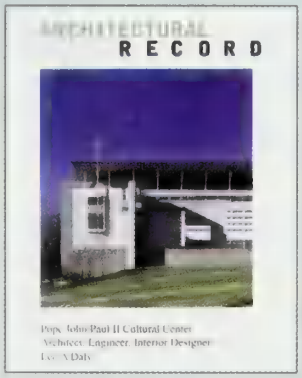

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Garrett Finney brings space habitability down to earth

Interviewed by Ingrid Whitehead

Three years ago, 1994 Rome Prize in Architecture winner Garrett Finney was happily designing furniture in New York City when a former classmate from the Yale School of Architecture called him to see if he was interested in becoming part of a new NASA program. With dreams of designing on Mars, he applied. Now senior architect at the Habitability Design Center of the Johnson Space Center in Houston, he works on designs for the Habitation Module of the International Space Station. A native of Philadelphia, Finney has spent time on this planet as a blacksmith, a carpenter—and he has designed not only furniture, but also houses and residential as well as commercial interiors.

Q: *How is your job different from that of an "earth-bound" architect?* Architects often say how difficult it is to be a designer in a developer's world. As a designer in an engineer's world, I contend with the fact that most of those creating the space station are primarily concerned with the function of critical systems and safety and not so much with the human interface. Everything at NASA is built to performance specifications, which require, basically, that everything function. What these specs leave out are the manner and ease of this function and, certainly, aesthetics. Together these are called "habitability" at NASA, and they are what I look out for and design to. The International Space Station (ISS) is first and foremost a place for science. To get the most out of this laboratory, we need a productive crew. As a happy crew is a productive crew, it therefore makes sense to pay closer attention to their surroundings than has been done previously.

We learn about these issues by studying our previous spaceflight experience, particularly Russia's MIR program; talking with astronauts; and researching analogous situations, such as the environments of arctic research stations and submarines. To make their spaces more "habitable," I have to take into consideration all the constraints that are part of space travel. These include how items are made and of what materials, issues of flammability and off-gassing, how they are packed and launched, the launch environment, the effects of radiation, life-cycle costs, and many others. Finally, the most important consideration is that astronauts are people and have normal human needs.

What can architects learn from your experience? In space, nothing is taken for granted. Working at NASA really makes you aware of how much we assume when designing for Earth, from the simple act of breathing to the sheer availability of products from around the world to seeing how systems of all sorts interact. I think buildings need to perform as well as possible. Why is it so uncommon to take into account the environment you are building in and adapt the building to it? While this seems obvious, it must not be, because it is clearly not done. For example, here in Houston so many houses are built with no consideration of how to keep them naturally cool. Instead, everyone leans heavily on the air conditioner instead of designing to minimize its use.

What is your mission, as an architect? We're sending people into an extremely hostile environment, and we still have to allow them to be people. This becomes more and more important the longer a mission might be, as astronauts start to live in space and are not just hacking it for a time. Going to Mars might be a three-year mission, which is a long time to spend even with your five best friends.

Photograph by Will Michels

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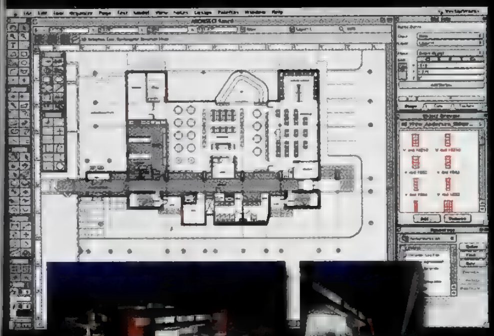

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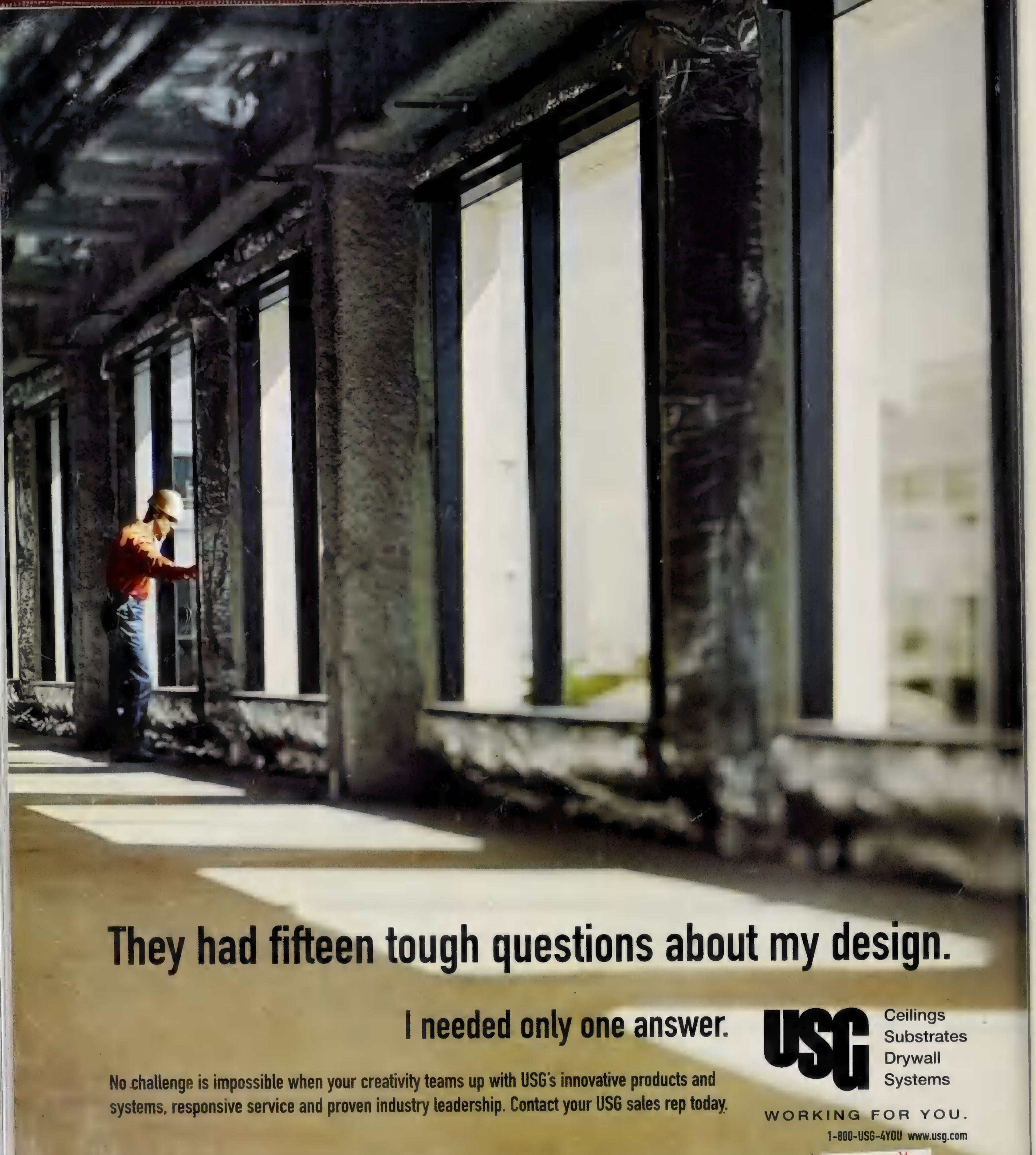

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